A MEASUREMENT SYSTEM FOR MONITORING PLAY IN TYPICALLY DEVELOPING CHILDREN AND CHILDREN WITH AUTISM

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A comprehensive measurement system was developed to monitor play in children with autism and typically developing children. The study was conducted in a preschool operated in conjunction with a center-based program for children with autism. The development of the measurement system was based on observations of four children with autism and three typically developing children during social and play activites. Data were collected on material use and several dimensions of play: Simple Manipulation, Functional Manipulation, Symbolic Toy Play, Symbolic Role Play and Play Themes. The results indicated that the measurement system consistently measured a wide range of play behaviors across children and materials. Significance of the information gathered from the measurement system in assessing play and designing interventions is discussed.

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CHAPTER 1

INTRODUCTION

Children with autism frequently display deficits in play skills, such as pretend play and object manipulation. This is described both in the diagnostic criteria for autism (American Psychiatric Association, 1994) and in descriptive studies on children's play (Baron-Cohen, 1987; Jarrold, Boucher, and Smith, 1993; Lewis & Boucher, 1988; Libby, Powell, Messer, & Jordan, 1998; Mundy, Sigman, & Ungerer, 1987; Ungerer & Sigman, 1981; Wing, Gould, Yeates, & Brierly, 1977). Descriptive analyses include studies comparing experimental groups of children with autism that are compared to control groups of typically developing children and children with mental retardation. Wulff's review (1985) suggests that early comparative studies from the sixties have shown that children with autism engage in more repetitive and stereotyped use of objects than conventional use of objects and that they use fewer number of objects than typical controls. These studies have also described a lack of functional (child uses objects in a conventional manner) and symbolic play (child attaches an imaginative function to objects or behaves as if an absent object is present) (Wulff, 1985; Wing, et al., 1977). Conversely, recent findings from studies in the past two decades show that symbolic toy play is not totally absent in this population (Baron-Cohen, 1987; Jarrold, et al., 1993; Lewis & Boucher, 1988; Libby, et al., 1998; Mundy, et al.,1987; Ungerer & Sigman, 1981). The differences between these studies could be due to discrepancies in definitions,

variables on which experimental and control groups were matched and conditions in which the children were tested (Jarrold et al. 1993). However, there is a general consensus that children with autism show deficits in play behaviors. The degree to which these deficits exist is unclear.

Several recent studies have shown that when instructed or prompted, children with autism do show some symbolic play (e.g. Lewis & Boucher, 1988; Ungerer & Sigman, 1981). However, when observed in spontaneous conditions children with autism show less symbolic play than typically developing children. Recent studies (Lewis & Boucher, 1988; Libby et al., 1998) also show that compared to typically developing controls, children with autism also demonstrate low rates of spontaneous functional play. When observed in instructed conditions the differences are less pronounced (Ungerer & Sigman, 1987; Lewis & Boucher, 1988). However, the quality of the symbolic play of children with autism seems to be far less complex than that of their typically developing peers. That is, the play of the children with autism seems to be more stereotyped, and show less variety (Libby et al., 1998).

Functional and symbolic play are assigned a pivotal role in a child's development (Lifter, Sulzer-Azaroff, Anderson, & Cowdery, 1993; Lifter, 2000). Typically developing children spend most of their time engaged in activities which provide opportunities for learning about objects and events and interactions with people. As stated above, several research findings have shown differences in play behaviors of typically developing children and children with autism. In light of these findings, play also serves as an important tool for clinicians and researchers who work with children with autism. Play is

used as a diagnostic tool for assessing children at-risk, such as children with autism, and to design interventions to improve functioning of these children (Glitlin-Weiner, Sandgrund, & Schaefer, 2000).

Several studies in the field of behavior analysis have shown that teaching children with autism appropriate play skills is an effective way to promote language and social interaction (e.g. Coe, Matson, Craigie, & Gossen, 1991; Coe, Matson, Fee, Manikam, & Linarello, 1990; Goldstein & Cisar, 1992; Haring and Lovinger, 1989; Jahr, Eldevik, & Eikeseth, 2000; Stahmer, 1995; Taylor, Levin, & Jasper, 1999; Thorp, Stahmer, & Schreibman, 1995; Wolfberg and Schuler, 1993). Results from other behavioral studies have also shown that when children with autism have been taught appropriate play skills, inappropriate behavior has decreased (e.g. Santarcangelo, Dyer, & Luce, 1987; Stahmer & Schreibman, 1992). In each of the studies listed above, the focus has been on play as an independent variable designed to increase desired behaviors or decrease maladaptive behaviors. Little attention has been paid to teaching play skills as an objective in itself or studying different methods to teach these skills. The behavioral research literature is especially limited with regard to studies that aim at increasing play skills per se in children with autism. As a result, few behavioral measures exist on play skills and no comprehensive system exists within the behavioral field that monitors different types and dimensions of play.

However, a number of standardized play assessments have been developed during the past three decades. Many of these instruments are thouroughly described in the leading text on play assessment by Glitlin-Weiner et al. (2000). The purpose of these

assessments is either to assess play per se or to use play as a medium to assess other behaviors of young children. A few of the instruments that measure play involve the use of a methodology shared with applied behavior analysis, that is, direct observation. However, the conceptual premises of many of these assessments are based on developmental theories. In accordance with this theoretical framework, the purpose of these instruments is to track play behaviors within a context of typical development as well as to detect any deviations from the norm. A pool of diagnostic instruments intended for differential diagnosis of children at-risk such as children with autism is also available. Other tools involve using play to assess interaction between a parent and child, interactions within families, peer interaction and peer play. Finally, a variety of projective play assessments are available for use in play therapy with children. The instruments that are used to measure play behavior use a variety of measurement methods that range from indirect observations, such as scales, questionnaires and interviews to direct observation methods (Glitlin-Weiner et al. 2000).

Many of the instruments that require observation of behavior use scales and questions as a guideline for the observer to describe the behavior. But very few instruments use direct quantitative recording of occurrence of the behavior. Only two instruments are available that use that type of method. They will be described here. The Play Observation Scale (POS) by Rubin (Coplan, 2000) measures both social behavior and structural components of play. It utilizes an interval recording system and measures four different types of play in a free-play setting. According to Coplan the definitions are based on the work of Piaget from 1962 and include both functional and pretend play. The

POS is being used as a clinical and a research tool to study various aspects of play behaviors of typically developing children as well as the play of children with developmental disabilities. The other instrument, The Developmental Play Assessment (DPA), (Lifter, 2000) was designed for use with children with developmental delays and disabilities. Its purpose is to assess play of individuals in this population and then to use the data to design intervention programs. The DPA was designed within a developmental theoretical framework. It records what play activities the child displays, what play activities the child is in the process of learning and what play activities are developmentally too difficult for the child. Intervention goals are based on this information about the child's play, and target activities that the child is in process of learning. Definitions are grouped into fine-grained categories that are based on research by Lifter and Bloom (1989) and other research on how play of typically developing children progresses from late infancy through the preschool years. The DPA uses a 30-minute videotaped sample of the child's play in a setting that is familiar to the child with a parent or teacher present. Four sets of toys that support the developmental sequences of play from simple manipulation to pretend, sociodramatic and fantasy play, are presented to the child, one set at a time. Frequency of discrete play actions are counted from the observation sample. Following this the play actions are organized into respective definition categories and results summarized according to the developmental sequence. Finally, each category of behaviors that the child displays is analyzed in terms of what the child has learned (Mastery), what the child is in the process of learning (Emergence), and a category of actions that the child does not display (Absence). Research has been

conducted on the developmental premises that the DPA (e.g. Lifter et al. 1993) purports to assess. This research is currently being conducted by Lifter and colleagues on several aspects of play intervention with children with autism and is based on data gathered from the DPA to identify developmentally relevant goals (Lifter, 2000).

In contrast to the play assessment literature, where little behavioral research appears, a limited number of published behavioral intervention studies have been conducted to increase play skills of children with autism. A search of intervention studies was done by using the PsychInfo database with the search terms children with autism, play, and activity engagement. Additionally, cross reference checks were conducted to identify studies that did not appear through the search. From this pool of published studies, those that employed direct observation and single-case design were selected for review and analysis. This selection process and criteria yielded only nine studies. These studies will be described here.

The studies specifically targeted various types of play behavior. Table 1 lists the nine studies that will be reviewed and analyzed. Authors are listed in the left column, then the settings where the research was conducted are listed, followed by types of play materials that were used in each study. Table 2 lists the same studies with authors in the left column, followed by the target behaviors, then the type of play that was measured and the dimensions of play, and the measurements in the far right column. Each of the studies will be described in the order in which they were published. In the following brief summaries of these studies, additional details pertinent to the current study are described.

In a clinic setting, using a ball, Coe et al. (1990) looked at the occurrence of object manipulation and verbal statements using an interval recording system. In a home setting, Coe, Matson, Craigie, et al. (1991) using a ball, a puzzle, a coloring book and tinker toys, looked at object manipulation, verbal statements, ball contact, play initiations, cooperative play and appropriate play using an interval recording system. In a home and a clinic setting, using play theme props and other materials, Stahmer and Schreibman (1992) studied object manipulation where they observed the occurrence of appropriate play, using an interval recording system. In a school setting, using blocks, manipulatives, figurines and dolls, vehicles, play theme props and beads, Lifter et al. (1993), looked at object manipulation and pretend play and observed the occurrence and complexity of unprompted target play activities that had been determined with the DPA instrument. They used a frequency recording system. Also in a school setting, using an unspecified range of age appropriate, constructive and sociodramatic toys, Wolfberg and Schuler (1993), looked at object manipulation and pretend play and observed the occurrence and complexity of play with objects and social play with peers using an interval recording system. The authors also conducted parent-teacher interviews about the children's play and a symbolic play assessment to gather pre-assessment data and for social validity measures. In a home setting, at a school and clinic, using figurines and dolls, play theme props and a variety of placeholder objects, Stahmer (1995) also studied object manipulation and pretend play, and observed the occurrence, complexity and variety of symbolic play using an interval recording system. In a home setting and at a clinic, using figurines and dolls, play theme props and various ambigous items, Thorp et al. (1995),

examined object manipulation, verbal statements related to activity and pretend play and observed the occurrence and complexity of role playing, make believe transformations and spontaneous speech using an interval recording system. The authors also looked at persistence in play themes, that is the child's ability to engage in a play theme from the beginning to the end. In addition to the measures described above, an assessment of general play skills, The Play History Interview (Rogers, Herbison, Levis, Pantone, & Reis, 1986, as cited in Thorp et al.), was administered to the children's parents. In a home setting, using vehicles and color forms, Taylor et al. (1999) looked at verbal statements related to play activity and observed the occurrence of scripted and unscripted play comments using both an interval and a frequency recording system. Finally in a home setting and at a school, using figurines and dolls and vehicles, Jahr et al. (2000), studied object manipulation and observed the occurrence and variety of play responses using a frequency recording system. A measure of cooperative play was derived according to predetermined criteria from the data of the play responses emitted with a play partner.

Most of the studies reviewed above were conducted at home, although a few were conducted both at home and in another setting, e.g., a school or a clinic. In some studies the second setting was used for generalization probes. In general, the investigators used materials that are typically found in preschool classrooms, as well as using play materials from home. However, in most of the studies the authors did not necessarily make available materials that are considered specifically to represent or support specific types of play. Only Lifter et al. (1993) and Wolfberg and Schuler (1993) provided access to a

wide range of materials, although two of the studies that measured complexity of play (Stahmer, 1995; Thorp et al. 1995) used ambigous items, such as sticks, piece of cardboard and tissue in order to support symbolic play. In all except one of the studies, the authors looked at object manipulation, but in only half of the studies did the authors examine pretend play. Half of the studies also looked at verbal statements related to play activities. All of the studies measured occurence of the target behaviors. In several of the studies other aspects of the target play behavior were also measured. Two studies measured variety of play, that is, the extent to which the child engaged in new or different play actions, and four studies measured different levels of complexity of play depending on how the child interacted with the play material or engaged in any other behaviors. The primary measurement method in all of the studies was direct observation. Some of the studies also employed indirect assessments such as interviews or questionnaires either as a pre-assessment tool or in order to obtain measures of social validity. Very few studies used frequency measures in their data collection, and most used interval recording systems. None of the studies measured duration of play behavior.

In summary, most of the intervention studies were conducted in settings typical for and familiar to young children. However, few studies were conducted in a typical play area of those settings, with materials that are considered to support different types of play and different levels of complexity. Even though the intervention studies used a wide range of materials overall, in most of the studies the materials that were used were directly related to the target behavior or toys of interest to the child. This limits the range of play types that the child can engage in, and the opportunity for the child's behavior to

generalize to other materials. Also, in none of the intervention studies were the materials used during particular play actions recorded. This limits information on what toys the child uses during play, how the child is interacting with the toys, whether the child's behavior is generalizing to other materials and if so, what materials. This information can be useful in research on the effects of materials on play behavior and give the practitioner information about the child's interaction with materials during play.

Complexity of play was only measured in half of the intervention studies and with both the assessment instruments that utilized direct observation. In the other half of the studies only the occurence of a target play behavior was measured which is a very limited way to target play behaviors in intervention. Complex play, such as functional manipulation of objects and pretend play, may serve important functions in a child's development (Lifter, 2000). These behaviors can be especially important in peer interaction, where reinforcing properties of both the child's and peer's behavior such as appropriate play are important to initiate and maintain interactions. Thus, when designing intervention programs for children with autism, play behaviors that contribute to social development should be targeted. More specifically, almost all of the intervention studies measured object manipulation, but only half of the studies measured pretend play. Pretend play is an effective way to increase and improve social skills among children with autism as some intervention studies have shown (Thorp et al, 1995; Stahmer, 1995).

Only two intervention studies measured variation. As mentioned above according to descriptive studies, the functional and symbolic play of children with autism is stereotyped, showing little variation (Libby et al., 1998). This is one difference between

the play of children with autism and the play of typically developing children. Thus, intervening on this aspect of play behavior can be expected to increase the quality of the child's play and expand the child's play behavior and experience.

A majority of the studies recorded data with an interval system rather than using frequency measures. However, interval recording can be an inaccurate recording method because it is very sensitive to the length of the observation interval. Depending on the length of the interval, and length and frequency of the response being recorded, the interval system can either inflate or deflate the occurrence of the behavior (Poling, Methot, & LeSage, 1995; Hartmann & Wood, 1990; Foster & Cone, 1986). This is especially relevant when recording different types of play behaviors that can vary depending on the materials the child is manipulating.

Finally, none of the intervention studies compared the play of typically developing children to the play of children with autism. This may be important for several reasons. First, the intervention aims for the complexity and frequency of the various types of play with particular materials can be established (Haughton, 1972) by observing exemplar players (Gilbert, 1978). Second, observation of a wide variety of players allows further development of sensitive measurement systems across all play types. Finally, observing and then targeting responses that are common to the typical peer group enhances the likelihood that favorable intervention outcomes will allow children entrance into the natural community of reinforcement (Baer & Wolf, 1970; McConnell, 1987).With these strengths and weaknesses in mind the purpose of this study was to develop a comprehensive frequency measurement system that monitors and differentiates

the complexity and variety of play in children with autism and typically developing children in the same setting with a large and varied pool of materials available at any given time.

CHAPTER 2

METHOD

Setting

The study was conducted at a preschool for typically and atypically developing children in northern Texas. The preschool is operated in conjunction with a center-based program for children with autism where behavior analytic methods are being employed in treatment for those children. The children with autism are provided with opportunities to engage in and acquire skills in play and social interaction with the typically developing children as well as receiving individualized instruction in other skill areas. The school operates from 8:45 in the morning to 1:00 in the afternoon and serves children of ages 2-5. In addition, the children with autism receive individualized instruction periodically between 8:45 and 1:00 and always from 1:00 to 2:00 in the afternoon.

The preschool is located in one large room in a church. The classroom is divided into four activity areas (zones): Language and arts (zone 1), math and science (zone 2), social and play (zone 3) and an area for various activities especially intended for instruction with a child with autism and a typically developing peer (zone 4). Waist-high shelves (both movable and permanent) divide the classroom into the areas. The tables in two of the activity areas are used for seating the children during snack time. Appendix B provides a diagram of the classroom organization.

The instructional activities and physical arrangement of the preschool are consistent with the "zone" procedure (LeLaurin & Risley, 1972). In this procedure one

teacher is responsible for a particular activity area (zone) and each child moves between areas as he or she completes tasks within one area. This procedure is in contrast with a "Man-to-Man" procedure where one teacher is reponsible for a particular group of children and moves with the children between activity areas when the last child in the group has finished his or her task.

At the preschool where this study was conducted, the time during which the children and teachers were engaged in activities within zones was divided into two parts during a morning session. The first zone session was from 9 a.m. to 10 a.m. and the second zone session was from 11:15 p.m. to 12:15 p.m. From 10 a.m. to 11:15 a.m. the children were taken to the bathroom, were engaged in motor activites and received snack. From 12 p.m. to 1 p.m. the children ate lunch and were engaged in circle time until the typical children were picked up by their parents. For the purpose of this study, the zone procedure described above was modified so that each child was assigned to a group of peers which participated in activities within each zone for 15 minutes. Each group of children consisted of one child with autism and two or three typically developing peers. After the 15 minute period, each child in the group moved to a different zone. One teacher was responsible for engaging the children in a zone area during both zone sessions, but did not move with the group of children from one zone to another. Appendix C provides the Children's Rotation Schedule.

Participants

All of the children with autism that were enrolled in the preschool participated in the study, but the selection of the typically developing children was based on results from

a play and social skills survey that the preschool teachers and the facilitators for the children with autism participated in. They rated individually the social and play skills of each child in the preschool on a 4 point scale. Each teacher marked the amount of time (Never, seldom, occasionally, always) she considered the child to be engaged in three types of play skills and one aspect of social skill as well as marking the number of children she considered the child to engage in certain levels of social skills with. Appendix D displays the Play and Social Skills Survey which lists the skills that each child was evaluated on. The play and social skill level for each child was determined by the number of teachers that circled each dimension and each child was assigned points accordingly. The three children that were evaluated as displaying the highest level of social and play skills by receiving the highest score were selected for the study. Further breakdown of results by particular skills for the typical children and children with autism, is displayed in Table 3. The typical children that were selected for the study were Sophia, Colette and Thomas. At the beginning of the study, Sophia was 2 years and 11 months old and received a score of 11 on play skills and 14 on social skills. Colette was 3 years and 5 months and received a score of 12 on play skills and 17 on social skills. Finally, Thomas was 4 years old and received a score of 12 on play skills and 18 on social skills.

The children with autism were Sean, Jose Isaac and Daniel. Sean was 3 years and 11 months at the beginning of the study and received a score of 7 on play skills and 11 on social skills. Jose was 4 years and 8 months old and received a score of 8 on play skills and 3 on social skills. Isaac was 4 years old and received a score of 9 for play skills

and 4 on social skills. Finally, Daniel was 5 years and 5 months old. He received a score of 3 on play skills and 1 on social skills.

The teachers that participated in the study were graduate and undergraduate students in Behavior Analysis, preschool staff and volunteers.

Materials

At the beginning of the study, play materials that belonged to the preschool were sorted into four categories: blocks, manipulatives, vehicles, and figures and dolls. Each category contained a subset of play materials. Eight play themes were also created: Firefighters, Puppet Show, Gardening, Construction Workers, Post Office, Fast Food Restaurant, Doctor, School and Kitchen. Appendix E provides a list of Play Materials and Play Theme Props. The play themes were created from play materials that belonged to the preschool, and other materials that were either bought or brought from staff and the author. Play materials for each category and props for each play theme were stored in plastic and cardboard boxes that were labelled with each subcategory or play theme and had a picture of the materials that belonged to that particular box.

A subset of play materials from each category and one set of play theme materials were made available in the zone area each day. During the day the boxes of play materials were located on the shelves in the social/play zone where the children could access them. A box with the play theme props was located on the floor in the same zone. One subset of play materials from each category was located permanently in the zone: Wooden Blocks, Lincoln Logs, Family Dolls, and Kitchen props. Appendix E provides a

list of Permanent and Rotating Materials. Other play materials were rotated every day according to a predetermined schedule. Appendix F provides the Toy Rotation Schedule.

Procedures

Approximately two months before videotaping started, the author brought the camera into the classroom and taped the children and the teachers in order to desensitize them to the camera and prevent reactivity during baseline. Before videotaping for baseline data started, the facilitators for the children with autism and the zone leaders in the social zone received instructions to continue applying the types of methods they had been applying with the child with autism. These methods were to prompt as specified by the child's treatment program, to praise appropriate behavior, to follow classroom procedures for inappropriate behavior and redirect the child back to the zone area if they left without permission. Appendix G provides General Baseline Procedures. These instructions were given in a weekly staff meeting and followed with feedback for the first sessions and reiterated during a later staff meeting where inappropriate behavior was defined more specifically. Appendix G provides these specific instructions to the General Baseline Procedures. Implementation of these procedures was observed by the author but not recorded.

Data collection

The behavior of the children who participated in the study was recorded with a video camera while they were engaged in the social and play zone. The zone includes two waist-high shelves that demarcate the area, a child-sized table, four child-sized chairs, and child-sized kitchen furniture (stove, sink, cupboard and shelves). Recording took

place 4 days a week for 6 weeks from 9 a.m. to 10 a.m. and 11:15 a.m. to 12:15 p.m. Tapes from two of those weeks were used for gathering baseline data and the other four for developing the observation code. Each child's behavior was recorded for the 15-minute period when he or she was scheduled to be in the zone. An RCA "VHS-C" Camcorder cc6151 was used for recording. The author recorded all of the subject's behavior and was situated outside of the social and play zone but moved inside the zone at times if necessary for recording purposes. Inside the zone was a teacher (Zone leader), a therapist that facilitated play and social interaction for the child with autism and two to three typically developing peers.

Data were collected on the play behavior of each child from the videotape of the first 5 minutes of each session. The observer recorded number and duration of play themes, number of different types of play actions, play materials and play roles. Each material was assigned a letter according to the play materials category it belonged to and the letter of the category was recorded.

Measures

Data were collected on several dimensions of play. A brief description of the response categories and definitions is included here. For the complete observation protocol see Appendix H.

Play theme was listed if the child was engaged in two or more sequences of symbolic toy play actions or symbolic role play actions directed to the same set of materials or if the child made a verbal statement about an activity or an event that was happening or was about to happen (e.g. Birthday Party), an imaginary location (e.g.

Grocery Store) or a situation (e.g. Thunderstorm) that the child was in. Play theme was listed when any of these symbolic play actions or verbalizations from the child occurred alone, but also when adult or peer made such verbalizations and they were preceded or followed by functional or symbolic play actions by the child that were related to these verbalizations.

Data were taken separately on each type of play action. Each type of play action has a separate datasheet with definitions, scoring rules and examples. Four types of play actions were recorded. Functional Manipulation: required child to make physical contact with play materials according to their conventional function or characteristics. In order for Simple Manipulation play action to be counted the child had to physically manipulate play materials but not according to their conventional function, and not within context of play and providing the child did not made a verbal statement attaching an imaginative function to the play material. Symbolic Toy Play required the child to assign a thematic or imaginative function to play materials. Symbolic Role Play required the child to pretend to be something or someone else or assign a role to someone else.

For each type of play the observer marked each play action as unprompted or prompted. Prompted Play Actions were defined as play actions that were immediately preceded by assistance from adult that guides the child to engage in a particular type of play action. Play actions were also scored as prompted when the adult provided assistance while the child was engaged in a particular play action. Assistance from adult included verbal prompts, demonstrations of play actions or physical guidance.

Before data were collected on the number of play actions for each type of play, the observer recorded general information about the child's play on a datasheet marked "Play Summary". The observer watched 5 minutes of the child's play and recorded whether the child was engaged in any of the four types of play actions during the observation period. The observer noted the topography of the child's play actions and checked appropriate boxes on the Play Summary. On the same sheet, the toys the child used during play and the roles the child was engaged in were also listed. Finally the observer listed play themes the child was engaged in and recorded the duration of each play theme. After this was completed, the observer watched the tape again and took data on the frequency of each type of play action the child was engaged in according to the Play Summary. A complete description of the Observation Protocol is included in Appendix H.

Consistency

Reliability of data collection on the number of each type of play action was assessed with consistency checks. Checks were done on average of 34% of the sessions for all of the children in each category. Data were collected on the first and last session by the same observer. Consistency was assessed for total play actions for each play type (i.e. Simple Manipulation, Functional Manipulation, Symbolic Toy Play and Symbolic Role Play) across all children and also for each child. Consistency was also calculated separately for unprompted and prompted play actions by dividing the lower number of play actions by the higher number and multiplying by 100.

CHAPTER 3

RESULTS

Consistency

Consistency was calculated for each type of play action for each child. Table 4 displays consistency results for all play type categories, Simple Manipulation, Functional Manipulation, Symbolic Toy Play and Symbolic Role Play. Further breakdown of consistency results for unprompted and prompted play actions, and for each type of play action for each child is also displayed in Table 4. The top portion of the table displays the mean consistency and range for total play actions, unprompted and prompted play actions of each play type. Below, consistency results of each play type for each child is displayed, including results for total play actions, unprompted and prompted play actions. No consistency calculations were done for materials and no consistency checks were done for play themes. Consistency was highest for Symbolic Toy Play (96.3%, range, 33-100) and lowest for Simple Manipulation (86.2%, range, 33-100). Consistency for total play actions per child for each play type was generally high, (majority of checks over 70%), for all of the children except in Simple Manipulation for Sean (66.5%) and Thomas (63.1%) and in Symbolic Toy Play for Thomas (69.2%). Consistency for unprompted play actions was also high for all of the children, although it was generally lower than for total play actions. There were four cases of consistency lower than 70%: Sean (66.5%) and Thomas (63.1) in Simple Manipulation, Colette in Symbolic Role Play

(42.3) and Thomas in Symbolic Toy Play (69.2). Consistency was high for prompted play actions, with no child with consistency below 70% for any play type.

Play Actions

All Children

Play, Figure 1

Figure 1 displays a profile of all play types for all of the children. Each graph displays the number of play actions of each type of play (i.e. Simple Manipulation, Functional Manipulation, Symbolic Toy Play and Symbolic Role Play) for each child across the six sessions. Children with autism are in the left column and the typical children in the right column. Closed circles indicate Simple Manipulation play actions, open circles indicate Functional Manipulation play actions, closed triangles indicate Symbolic Toy Play actions and ´x´ indicates Symbolic Role Play ations. Please note that Sean was absent during session 2 and Thomas was absent during sessions 4, 5, and 6. No data are displayed for Sophia in session 1 because she left the play area during the middle of the session and recording of that session was not completed.

Children with autism. For two of the children with autism, Isaac and Daniel, the the highest number of play actions were Simple Manipulation. For the other two children, Sean and Jose, the highest number of play actions were Functional Manipulation. The lowest number of play actions that were observed with all of these children were Symbolic Role Play.

Typical children. The responding of Sophia and Colette appeared to be more variable than the children with autism. Sophia and Colette had similar high rates of

Functional Manipulation, Symbolic Toy Play and Symbolic Role Play. Thomas had slightly higher numbers of Functional Manipulation than Symbolic Toy Play.

Total Unprompted and Prompted Play, Figure 2

Figure 2 displays a profile of total unprompted and prompted play actions for each of the children. Each graph displays the number of unprompted and prompted play actions across the six sessions. As with Figure 1, children with autism are in the left column and typical children are in the right column. Closed circles indicate unprompted play actions and open circles indicate prompted play actions.

Children with autism. More unprompted than prompted play actions were observed with the children with autism. Range of prompted play actions is 1-30 and of unprompted actions 1-109. The session mean for prompted play actions for each child is 9.6 for Sean, 1.16 for Jose, 2.8 for Isaac, and 2.5 for Daniel.

Typical children. Almost all of the play actions that were observed with the typical children were unprompted. Prompted play actions were only observed with Sophia and Colette. The session mean for prompted play actions for each child is 1.66 for Sophia. Colette only had one prompted play action.

Materials, Figure 3

Figure 3 displays for each child the number of play actions with the different categories of materials (i.e. blocks, manipulatives, figurines and dolls, vehicles, play theme props and other materials). The total number of play actions observed for each child with materials in each category is displayed above each bar in the graph. As before, children with autism are in the left column and typical children are in the right column.

As mentioned in the description of Figure 1, Sean was absent in session 2, Thomas was absent in session 4, 5, and 6 and no data are displayed for Sophia in session 1. Please note that, absent days may affect the number of play actions observed with Sean, Thomas and Sophia manipulating play materials.

Children with autism. All of the children with autism manipulated a majority of the materials during the six sessions. However, most of their play actions were observed during manipulation of materials from one or two categories.

Typical children. Two of the expert players manipulated a majority of the play materials during the six sessions. Sophia manipulated only three categories out of six. Of those three categories most of her play actions were observed with Play Theme Props.

Play Themes, Figure 4

Figure 4 displays the cumulative number of play themes for each of the children across the six sessions.

Children with autism. With Sean and Isaac, the cumulative number of play themes starts to increase in session 3. Sean was not engaged in any play themes until session 4. Isaac's engagement remained stable from session 1 to session 3 and continued to increase until the last session. Jose's engagement in play themes started increasing in session 1 and then became stable in sessions 5 and 6, as did Sean's engagement. Daniel was not engaged in any play themes across all sessions.

Typical children. Colette's and Sophia's engagement in play themes started increasing right from their first session and continued increasing throughout session 6.

Thomas did not engage in any play themes until session 3 and was absent from school after that point.

Sophia

The presentation of the data for each child follows the same format. Sophia's data presentation will be described in fuller detail. A summary of the results follows for each of the six remaining children.

Play types, Figure 5

Figure 5 displays a play profile for Sophia. It displays the number of play actions for all play types, total unprompted and prompted play actions and unprompted and prompted play for each type of play action: Simple Manipulation, Functional Manipulation, Symbolic Toy Play and Symbolic Role Play. On the graph for All Play in the top right part of the figure, closed circles indicate Simple Manipulation, Open circles indicate Functional Manipulation, closed triangles indicate Symbolic Toy Play and ´x´ indicates Symbolic Role Play. On the graph for total unprompted and prompted play actions in the top right portion of the figure, closed circles indicate unprompted play actions and open circles indicate prompted play actions. Please note that no data are displayed for Sohpia in session 1 because she left the play area during the middle of the session and recording was not completed for that session.

All play. The number of play actions for each type of play that were observed with Sophia varied across all sessions. The range of Simple Manipulation is 2-20, Functional Manipulation, 2-19, Symbolic Toy Play, 2-18 and Symbolic Role Play 2-17.

Unprompted and prompted play. With Sophia, a higher number of unprompted play actions than prompted play actions was observed. The range of unprompted actions is 5-46 and of prompted actions is 1-5. The prompted play actions occurred during Symbolic Toy Play and Symbolic Role Play with no prompted actions occurring during Simple Manipulation and Functional Manipulation.

Materials, Figure 6

Figure 6 displays the number of play actions observed with Sophia manipulating the different categories of materials (i.e. blocks, manipulatives, figurines and dolls, vehicles, play theme props and other materials). Also displayed is the number of Simple Manipulation, Functional Manipulation, and Symbolic Toy Play observed with the child manipulating each different category of play materials. Solid black bars indicate Simple Manipulation Play, ´Striped´ bars indicate Functional Manipulation, and white/open bars indicate Symbolic Toy Play.

Sophia manipulated materials from three categories, and the highest number of play actions was observed with her manipulating play theme props. When manipulating blocks, most of Sophia's play actions were Functional Manipulation and Symbolic Toy Play. When manipulating vehicles only Simple Manipulation play actions were observed. When manipulating play theme props most of her play actions were Functional Manipulation.

Play themes, Figure 7

Figure 7 displays Sophia's engagement in play themes during all sessions. The top portion of the figure displays the number of thematic episodes during each session

and the bottom portion of the figure displays the number of theme types during each session.

Sophia was engaged in thematic episodes throughout the observation period (range, 0-6) with the exception of session 4. She was engaged in the most number of epiodes during session 6. The range of theme types was 0-6. Throughout the observation period, Sophia was engaged in 1-2 different types of play themes during each session with the exception of session 6 where she was engaged in six different play themes.

Colette

Play types, Figure 8

All play. Simple Manipulation Play actions were the lowest number of play actions observed with Colette (range, 1-9) and the highest number of actions observed was Functional Manipulation (range, 8-24). Symbolic Toy Play varied across all sessions with range of 0-30 as did Symbolic Role Play with range of 0-22. Sessions 4 and 5 show the highest number of Symbolic Role Play.

Unprompted and prompted play. With Colette, a higher number of unprompted play actions was observed than prompted actions. The range of unprompted actions is 19-48 and prompted play actions is 0-1. The only prompted play action that was observed occurred during Symbolic Toy Play in session 1.

Materials, Figure 9

Colette manipulated materials from four categories: blocks, vehicles, play theme props and other materials (Flat plastic pieces). She did not interact significantly more with one category of materials than any other. When manipulating blocks and other

materials, most of Colette's play actions were Symbolic Toy Play. When manipulating vehicles, and play theme props most of her play actions were Functional Manipulation.

Play themes, Figure 10

Colette was engaged in thematic episodes throughout the observation period (range, 1-3). She was engaged in the most number of epiodes during session 1 and 5. Only one theme occurred during sessions 2, 3, or 4. The range of theme types is 1-3.

Thomas

Play types, Figure 11

All play. No Symbolic Role Play actions were observed with Thomas, but the highest number of play actions observed was Functional Manipulation (range, 12-21). Range for Symbolic Toy Play is 8-16 . Range for Simple Manipulation is 0-12.

Unprompted and prompted play. All of Thomas's play actions were unprompted (range, 20-42).

Materials, Figure 12

Thomas manipulated materials from all categories except Other Materials. The highest number of play actions were observed with Thomas manipulating blocks. When manipulating blocks, manipulatives and vehicles, most of his play actions were Functional Manipulation, with some occurrences of Simple Manipulation and Symbolic Toy Play. When manipulating figurines and dolls, Functional Manipulation and Symbolic Toy Play accounted equally for the play actions. When manipulating play theme props, most of Thomas' play actions were symbolic toy play.

Play themes, Figure 13

Thomas was engaged in thematic episodes during one session of the three that he participated in (range, 0-1) and there was only one type of theme.

Sean

Play types, Figure 14

All play. No Symbolic Role Play was observed with Sean, but Functional Manipulation was high (range, 2-26). The range of Symbolic Toy Play action was 3-16 and the range of Simple Manipulation play actions is 1-3.

Unprompted and prompted play. With Sean the number of unprompted and prompted play actions observed varied across all sessions. However, during the last two sessions more prompted play actions than unprompted actions were observed. Range of unprompted play actions is 1-19 and range of prompted play actions is 1-30. Most of the prompted play actions occurred during Functional Manipulation and Symbolic Toy Play.

Materials, Figure 15

Sean manipulated materials from all categories except manipulatives. The highest number of play actions were observed with Sean manipulating vehicles. When manipulating blocks, only Functional Manipulation was observed. When manpulating Figurines and Dolls, Vehicles and Play Theme Props, most of Sean's play actions were Functional Manipulation. When manipulating Other Materials, only Symbolic Toy Play was observed.

Play themes, Figure 16

Sean was engaged in thematic episodes during two sessions (range, 0-2). He was engaged in the most number of epiodes during session 5. The range of theme types was 0-2.

Jose

Play types, Figure 17

All play. The highest number of play actions observed with Jose throughout the observation period, were Symbolic Toy Play actions (range, 0-37). The lowest number of play actions observed were Symbolic Role Play Actions (range, 0-12). The range for Functional Manipulation is 7-39. The range for Simple Manipulation play actions is 0-13.

Unprompted and prompted play. With Jose a higher number of unprompted play actions than prompted play actions was observed. The range of unprompted play actions is 5-83 and the range of prompted play actions is 0-4. The prompted play actions occurred during all play types, with most of them occurring during Functional Manipulation.

Materials, Figure 18

Jose manipulated materials from all categories, and the highest number of play actions were observed with him manipulating Figurines and Dolls and Play Theme Props. When manipulating blocks and figurines and dolls and vehicles most of Jose's play actions were Functional Manipulation. When manipulating Manipulatives, Theme Props, and Other Materials, most of his play actions were Symbolic Toy Play.

Play themes, Figure 19

Jose was engaged in thematic episodes during all sessions except session 6 (range, 1-3). He was engaged in the most number of epiodes during session 1. Jose was only engaged in one theme type during the sessions that he was engaged in play themes.

Isaac

Play types, Figure 20

All play. The highest number of play actions observed with Isaac were Simple Manipulation play actions (range, 1-20) and the lowest number play actions observed were Symbolic Role Play Actions (range, 0-34). Range for Functional Manipulation is 2-38 and for Symbolic Toy Play is 1-39.

Unprompted and prompted play. With Isaac a higher number of unprompted play actions than prompted play actions were observed. The range of unprompted play actions is 2-109 and the range of prompted play actions is 0-9. The prompted play actions occurred during all play types except Simple Manipulation.

Materials, Figure 21

Isaac manipulated materials from all categories except Figurines and Dolls and the highest number of play actions was observed with him manipulating play theme props. When manipulating blocks and manipulatives, most of Isaac's play actions were Simple Manipulation. When manipulating vehicles, only Functional Manipulation was observed. When manipulating Play Theme Props, most of his play actions were Symbolic Toy Play. Only a single Simple Manipulation play action was observed when Isaac was manipulating Other Materials.

Play themes, Figure 22

Isaac was engaged in thematic episodes during four sessions (range, 1-2). He was engaged in the most number of epiodes during sessions 4, 5 and 6. The range of theme types is 1-2.

Daniel

Play types, Figure 23

All play. The highest number of play actions observed with Daniel was Simple Manipulation (range, 25-47). No Symbolic Toy Play or Symbolic Role Play was observed. Range for Functional Manipulation is 7-20.

Unprompted and prompted play. With Daniel a higher number of unprompted play actions (range, 31-71) than prompted play actions was observed. The range of unprompted play actions is 31-37 and the range of prompted play actions is 0-8. The prompted play actions occurred during Functional Manipulation.

Materials, Figure 24

Daniel manipulated materials from four categories: blocks, manipulatives, vehicles and other materials. The highest number of play actions were observed with Daniel manipulating blocks. When manipulating each of the four categories, most of his play actions were Simple Manipulation.

Play themes, Figure 25

Daniel was not engaged in any play themes.

CHAPTER 4

DISCUSSION

The purpose of this study was to develop a measurement system that monitors and differentiates the complexity and variety of play in children with autism and typically developing children in the same setting with a large and varied pool of materials available at any given time.

Complexity of play, that is different types of play, was observed with all of the children throughout the observation period. All types of play were observed with two of the children with autism, Jose and Isaac. No Symbolic Role Play was observed with Sean and Daniel, and Daniel did not engage in any Symbolic Toy Play. The number of play actions of each different type of play that the children with autism were engaged in differed. Sean was mostly engaged in Functional Manipulation during the majority of the sessions and Jose was mostly engaged in Functional Manipulation and Symbolic Toy Play. During four sessions, Isaac was mostly engaged in Simple Manipulation and Daniel was mostly engaged in Simple Manipulation during the whole observation period. The typically developing children were engaged in all types of play except Thomas who did not engage in any Symbolic Role Play. The different types of play were variable with Sophia and Colette. Thomas however, was engaged mostly in Functional Manipulation and Symbolic Toy Play during all of his sessions.

The play of most of the children was unprompted. More prompted play however, was observed with the children with autism than the typical children. Sean was observed with the most prompted play actions.

Variety in material use and play theme types can be determined from the information gathered by the measurement system. Variety in material use can be determined by looking at the number of different categories of materials the child manipulates during the observation period. All of the children showed some degree of variety in material use as they manipulated materials from a majority of the categories. However, the distribution of the number of play actions across categories differed among the children. The children with autism mostly manipulated materials from one or two categories, whereas the play of the typical children was more equally distributed across categories.

All of the children except Daniel were engaged in play themes. Two of the typically developing children, Sophia and Colette, were engaged in the most number of play themes throughout the observation period. However, two of the children with autism, Jose and Isaac, were engaged in only slightly fewer play themes. The main difference between the children was displayed in terms of variation in play or the number of different theme types the child engaged in during play. Variation can be determined both for the whole observation period and for each session. Typical children showed more variation across sessions (10-11 themes) than the children with autism (0-6 themes). The typical children also showed more within-session variation in theme types.

In summary, all of the children were engaged in Simple Manipulation and Functional Manipulation throughout the observation period. Symbolic Toy Play was not observed with one child (Daniel), and three children were not engaged in Symbolic Role Play. The children with autism were engaged mostly in one or two types of play with Simple Manipulation and Functional Manipulation accounting for most of their play actions. The play of the majority of the typically developing children was more varied both in types of play across sessions and the number of play actions per type. All of the children showed variety in material use, but the typical children were engaged in a greater variety of play themes.

Importance of Results

Like most of the intervention studies and assessment instruments on play, this study was conducted in a setting that was typical of young children. Few intervention studies, however, were conducted in a typical play area, with different materials to support different types of play. In contrast**,** this study was conducted in a structured play area in a preschool with five different categories of play materials available. Also, one aspect of this study that was not seen in any of the previous studies was collection of information on the materials used during particular play actions. In this study the category of the play material that the child was manipulating when engaged in a particular play action was recorded at the same time as the play action.

Both of the assessment instruments that were reviewed and half of the intervention studies measured complexity of play e.g., different types of play. One of the main purposes of this study was to design a system that was sensitive to the complexity

of play. This was done by developing definitions that measured different types of play. Only two intervention studies assessed variation in play actions. This was done in the present study by looking at number of categories of materials the children manipulated and also by looking at the total number of theme types across all sessions and within each session.

A major difference between the measurement system in this study and other studies is that frequency measures were used as opposed to an interval recording system, which a majority of the intervention studies used. Finally, another major difference is that this study looked at the play of children with autism and typically developing children under the same setting and material conditions. None of the intervention studies included observations of both populations.

Significance in Assessing Play

All of the aspects of this study that are listed above contribute to a more sensitive measurement system than any previously reported. The measurement system described here is likely to give a broad profile of the child's play and possibly aid in the design of effective play intervention programs for children with autism. The significance in assessing play is described below.

By assessing play in a setting typical of young children with a wide range of materials available, it is more likely that the investigator will obtain information about more complex play behavior with different types of materials, thereby obtaining a broader and more complete picture of the child's play. By recording the materials for a particular play action, the investigator obtains information on several aspects of play.

First, general information on what toys the child is manipulating and the variety of material use is obtained. Furthermore information on how different materials are affecting different types of play becomes available. And, finally in intervention studies information on generalization is more readily achieved. By measuring complexity of play, the investigator obtains information on how specifically the child is manipulating play materials and how play is reflected in the child's verbalizations, vocalizations and nonverbal behavior. Depending on the analysis of the data, the investigator can obtain information about the frequency of each type of play, proportion of each type of play in relation to other types of play and the total number of play actions, and patterns of different types of play across sessions. For example, whether the child is engaged more in certain types of play than others or whether the child's engagement in different types of play varies across sessions. By assessing specific actions and materials over time the investigator will obtain information about the variety of the child's play. This is important because this may be the aspect that differentiates best the play of children with autism from the play of typically developing children. Such measures will give information about the number of different play materials the child manipulates, especially whether the child is 'fixating' on a few materials as results from this study have shown. Assessment of play themes also gives similar information, i.e., whether the child is engaged in the same or varied play themes during the sessions or across sessions.

Information is also obtained on the types of play and the frequency of the types that typically developing children are engaged in, while in the same setting and having access to the same pool of materials as the children with autism. Also, information is

obtained about the play behaviors of different skill levels of players among the typical children. All of this information can be used to develop definitions that will contribute to a sensitive measurement system that differentiates between children with autism and typically developing children.

Frequency measures may suit the recording of play behavior better than interval recording. Play behaviors can vary in duration and therefore an interval system can either inflate or deflate the occurrence of the behaviors. Furthermore, according to the results from this study, it appears that play materials affect the frequency of the play response, because responses with some materials such as action figures or blocks can be shorter than other responses like driving a car. In such cases an interval system would deflate the occurrence of the behavior. However, it depends on the length of the interval which again would be difficult to determine with such a diversity of behaviors. For example the size of an interval may be too small for behaviors like driving a car, to measure the frequency accurately, that is, the occurrence of these behaviors would most likely be inflated. However, the same size interval may deflate the occurrence of high rate play actions like pulling blocks apart, or fighting with action figures.

Significance for Designing Interventions

The fact that this measurement system is designed for use in a typical setting with a wide range of materials aids in the design of interventions conducted in these types of settings. The possibility of conducting the intervention in a natural setting with typical materials enhances the likelihood that the intervention will target skills in the terminal

setting, the child's behavior will be maintained in that setting, will generalize to other materials, and possibly will continue to develop in an increasingly complex manner.

The information obtained on the child's use of materials may aid the design of an intervention in three ways. First, the practitioner can use the information on the materials the child is manipulating to intervene on material use per se. For example, if the child does not manipulate any materials at all or the frequency of play actions with materials is extremely low, the practitioner can use this information to increase the overall manipulation of materials. Also, if most of the child's play is with one material category such as blocks, the practitioner can use this information to increase manipulation of other material categories like vehicles and play theme props. Second, the practitioner can use the information on what materials are affecting what play type to intervene on the complexity of play. For example, if manipulation of blocks consists mostly of Simple Manipulation, the practitioner can use that information either to teach a different type of play with blocks, or to limit the opportunity for the child to manipulate blocks and promote manipulation of materials more likely to facilitate more complex play. Finally, the information about material use is important for the practitioner to measure generalization of different types of play across different types of materials.

The information obtained about the complexity of play behaviors also can be used in several ways to design an intervention. First, it can be used to intervene on the different types of play per se. For example, with a child who does not engage in any type of play and hardly touches the play materials, the practitioner can use that information to shape manipulation of the materials, by beginning with Simple Manipulation, and then

moving on to Functional Manipulation and eventually to Symbolic Toy Play. Second, as stated in the introduction, Functional Manipulation and pretend play may serve important functions in interaction with peers. Thus, the practitioner can use the information on Functional Manipulation, Symbolic Toy Play and Symbolic Role Play to intervene in ways that will enhance the mutual reinforcement of peer interaction and to increase initiations of interaction and maintain those interactions when they have been established.

The information on the variety of material use and engagement in play themes can be useful to intervene on the the child's play behaviors and increase the variety of his or her play. This can be done by intervening on the number of different materials the child manipulates as described above and increasing the number of different types of play themes the child is engaged in.

Limitations and Future Research

Results from this study reveal several aspects of the recording system that may need to be reconsidered or improved. One of the challenges in developing this measurement system was to find a suitable unit of analysis. This was a difficult task because the play behaviors in question are diverse in topography and duration. The children were engaged in responses such as pulling blocks apart, fighting with dinosaurs, as well as engaging in elaborate play themes of witchcraft and trips to 'Old McDonalds Farm' and on the way there, picking up an abandoned puppy off the road. For each type of play a unit of analysis, the play action, was created to capture the occurrence of that play type. The play action of Symbolic Role Play may be too small to reflect this type of play accurately because it often involves several actions and verbalizations that are all

part of the same role, but are counted as separate Role Play Actions. For example, being a cook may involve a couple of different actions such as, stirring in the pot, turning the knobs of the stove, putting the dish in the oven, taking the dish out of the oven and then telling the peer that the dish is hot. According to the definition of Symbolic Role Play, all of these behaviors are counted as five Symbolic Role Play actions. Perhaps it is more accurate to count the collection of all these behaviors as one Symbolic Role Play action. This issue needs to be explored further and tested.

In general, the consistency of measurements of all types of play for all of the children was high. However, one type of play, Simple Manipulation, showed lower scores than the other types, especially with three of the children, Sean, Thomas and Jose (See Table 3). There are three possible reasons for low consistency. First of all, it can be difficult for the observer to determine the type of play behavior she is observing because the definition may not be specific enough. Second, low rates of behavior (under 10 responses) can result in low consistency scores even though the observation scores differ by only one response. This could account for Sean's data in one of the sessions that was scored for consistency, where only three responses were observed the first time and one response for the second time. Furthermore, low consistency could be a result of the observer not being consistent in scoring the frequency of the actions either because the behavior occurred at a high rate or it was not discrete enough to be recorded consistently. This could account for the low consistency of Simple Manipulation in Thomas and Jose's data. Finally, in addition to consistency, reliability with two independent observers would increase confidence in the measurement system.

Another concern is the measurement of Symbolic Toy Play. This definition includes several different symbolic behaviors such as assigning a thematic or imaginative function to materials, behaving as if an absent object is present, attributing false or absent properties to an object and assigning a character to an object, such as the child saying that the character, Thomas the Train, is sad. It would be interesting to measure the quality of Symbolic Toy Play by dividing it into subtypes according to the behaviors described above. Libby, Powell, Messer and Jordan (1998) measured three aspects of symbolic toy play that correspond to the categories described above, and found that children with autism displayed as much object substitution as typically developing children but showed less play in terms of attribution of false properties and reference to an absent object. Information about this aspect of Symbolic Toy Play may be useful when designing intervention for children with autism in terms of determining target behaviors. Also, in this measurement system it would be possible to see what toys the children are manipulating when they are engaged in these particular types of Symbolic Toy Play.

Related to this issue is the type of materials that are in the play area. Although the pool of toys that was available in this study consisted of a wide range of play materials typical for young children, it may be beneficial to add more ambigous items such as beads, sticks, strings, or sheets of paper or tissue in order to support symbolic play as did Stahmer (1995) and Thorp et al. (1995). It is not possible to determine from the results of this study whether the lack of these materials had any effect on the frequency of this type of play. Also, if these materials were made available it may not guarantee more symbolic play with the children, and even though these materials are lacking it may not have any

effect on their play behavior (Lifter & Bloom, 1989). It would be interesting though to add these items and measure their effects on play behavior across the different children.

One aspect of the results was the low occurrence of prompted behavior for all of the children, although one child with autism showed high numbers of prompted play actions, and some of the play of the other children with autism was prompted. However, the definition of prompts could have contributed to these results. Only prompts to specific play types were recorded, that is only prompts that assisted or instructed the child to engage in a particular type of play action (i.e. Simple Manipulation, Functional Manipulation, Symbolic Toy Play and Symbolic Role Play) were counted. Prompts that consisted of assistance or instructions to play in general, but not to engage in a particular play type, were not included in the definition and therefore not counted. The reason for this was that the purpose of this measurement system was to record specific play behaviors and therefore, information about whether the child was prompted to engage in a particular type of play was considered more important. This is important when designing intervention, because it is possible to track the adult involvement with different types of behavior that the practitioner is planning to change. It may provide more useful information however, to also count general prompts as a separate category. It may be that the general prompts had an effect on specific types of play. Inclusion of general prompts would allow evaluation for such a relationship.

Although variety of material use and play theme types can be determined from the data obtained with this measurement system, no measure exists on the specific play actions in each type, that is the number of different Simple Manipulation play actions,

Functional Manipulation, Symbolic Toy Play or Symbolic Role Play actions. This would give valuable information about the variety of play and could easily be incorporated into the recording system by marking specifically new or different play actions of each type of play observed. This can be done in a similar way as prompted play actions are marked, that is by circling the play action that is recorded on the data sheet. In fact, this measure could be incorporated into the definition of Symbolic Toy Play by adding the subtypes discussed above.

One aspect of the recording procedures that may have affected the frequency of Symbolic Toy Play and Symbolic Role Play is the sound quality of the videotapes. The classroom where the videotaping took place became very noisy at times which resulted in difficulties for the observer in hearing what the children and teachers were saying. Even though this is not considered to have had a major effect on the results in this study, it could have resulted in the loss of some play actions. According to the observation rules the observer did not score play actions if she could not understand the child's, peer's or adult's verbalizations.

The length of the observation sample for each session was 5 minutes. However, it is possible that a longer sample would show a higher number of all behaviors, especially Symbolic Role Play and also greater numbers and different types of play themes. These behaviors often did not start until the middle of the school's scheduled play session which lasted 15 minutes.

The goal of this study was to design a frequency measurement system that monitors and differentiates the complexity and variety of play in children with autism and

typically developing peers. The results indicate that this was accomplished. The measurement system differentiates between the four types of play, that is Simple Manipulation, Functional Manipulation, Symbolic Toy Play, and Symbolic Role Play. With this system, consistent information is obtained about play of children with autism and typically developing exemplars, assessed in a specific play setting familiar to young children. This information is valuable for assessment and research on young children's play and should contribute to the design of effective interventions for children with autism.

APPENDIX A

TABLES

Table 1.

Settings and Materials Used in Behavior Intervention Studies on Play.

		Home	School	Clinic	Blocks	Manipula-tives	Figurines and Dolls	Vehicles	Play Theme Props	Other Materials
	Coe, Matson, Fee, Manikam, & Linarello, (1990).			✓						Ball
	Coe, Matson, Craigie, & Gossen (1991).	✓						✓		Ball, jigsaw puzzle, coloring picture book, Tinker Toys
	Stahmer & Schreibman (1992).	✓		✓	✓				✓	Puzzles, Games, Colorform Sets, Book with crossword puzzles, Puppet,
	Lifter, Sulzer-Azaroff, Anderson, & Cowdery (1993).		✓		✓	✓	✓	✓	✓	Beads
	Wolfberg & Schuler (1993).		✓		Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	"Wide range of age appropriate constructive and sociodramatic toys"
	Stahmer (1995).	✓	✓	✓			✓		✓	Placeholder objects: popsickle stick, triangular a triangular piece of cardboard, screws, a piece of felt, shoe box etc.
	Thorp, Stahmer, & Schreibman (1995).	✓		✓			✓		✓	Ambigous items: Popsicle Stick, small plastic disk, tissue, wooden stick
	Taylor, Levin, & Jasper (1999).	✓						✓		Color Forms
	Jahr, Eldevik, & Eikeseth (2000).	✓	✓		✓		✓	✓		

Table 2.

Play Behaviors, Types, Dimensions and Measures in Behavior Intervention Studies on Play.

Investigators	Behaviors	Type			Dimensions			Measures		
		Object Manipulation	Verbal Statement Related to Activity	Pretend Play (with or without objects)	Occurrence	Complexity	Variability	Frequency	Interval	Duration
Coe, Matson, Fee, Manikam, & Linarello, (1990).	Nonverbal play, Verbal play	✓	✓		✓				✓	
Coe, Matson, Craigie, & Gossen (1991).	Ball contact, Play Initiation, Cooperative Play, Appropriate Play	✓	✓		✓				✓	
Stahmer & Schreibman (1992).	Appropriate play	✓			✓				✓	
Lifter, Sulzer-Azaroff, Anderson, & Cowdery (1993).	Unprompted target play activities Generalized responses	✓		✓	✓	✓		✓		
Wolfberg & Schuler (1993).	Cognitive play with objects , Social play with peers	✓		✓	✓	✓			✓	
Stahmer (1995).	Symbolic Play	✓		✓	✓	✓	✓		✓	
Thorp, Stahmer, & Schreibman (1995).	Role Playing, Make Believe Transformations, Persistence, Spontaneous Speech	✓	✓	✓	✓	✓			✓	
Taylor, Levin, & Jasper (1999).	Scripted Play Comments, Unscripted Play Comments		✓		✓			✓	✓	
Jahr, Eldevik, & Eikeseth (2000).	Play Responses (Cooperative Play)	✓			✓		✓	✓		

Table 3.
Play and Social Skills Scores from Teachers' Evaluations of the Typical Children and the Children with Autism.

	Typical Children			Children with Autism			
	Sophia	Colette	Thomas	Sean	Jose	Isaac	Daniel
Play Skills							
Conventional Play	5	6	6	5	5	6	3
Pretend Play	6	6	6	2	3	3	0
Total	11	12	12	7	8	9	3
Social Skills							
Initiations and responses	5	6	6	4	1	2	0
Common interests	5	5	6	4	2	2	0
Patience with less skilled children	4	6	6	3	0	0	1
Total	14	17	18	11	3	4	1

Table 4.
Consistency Scores for Each Type of Play and for Each Child.

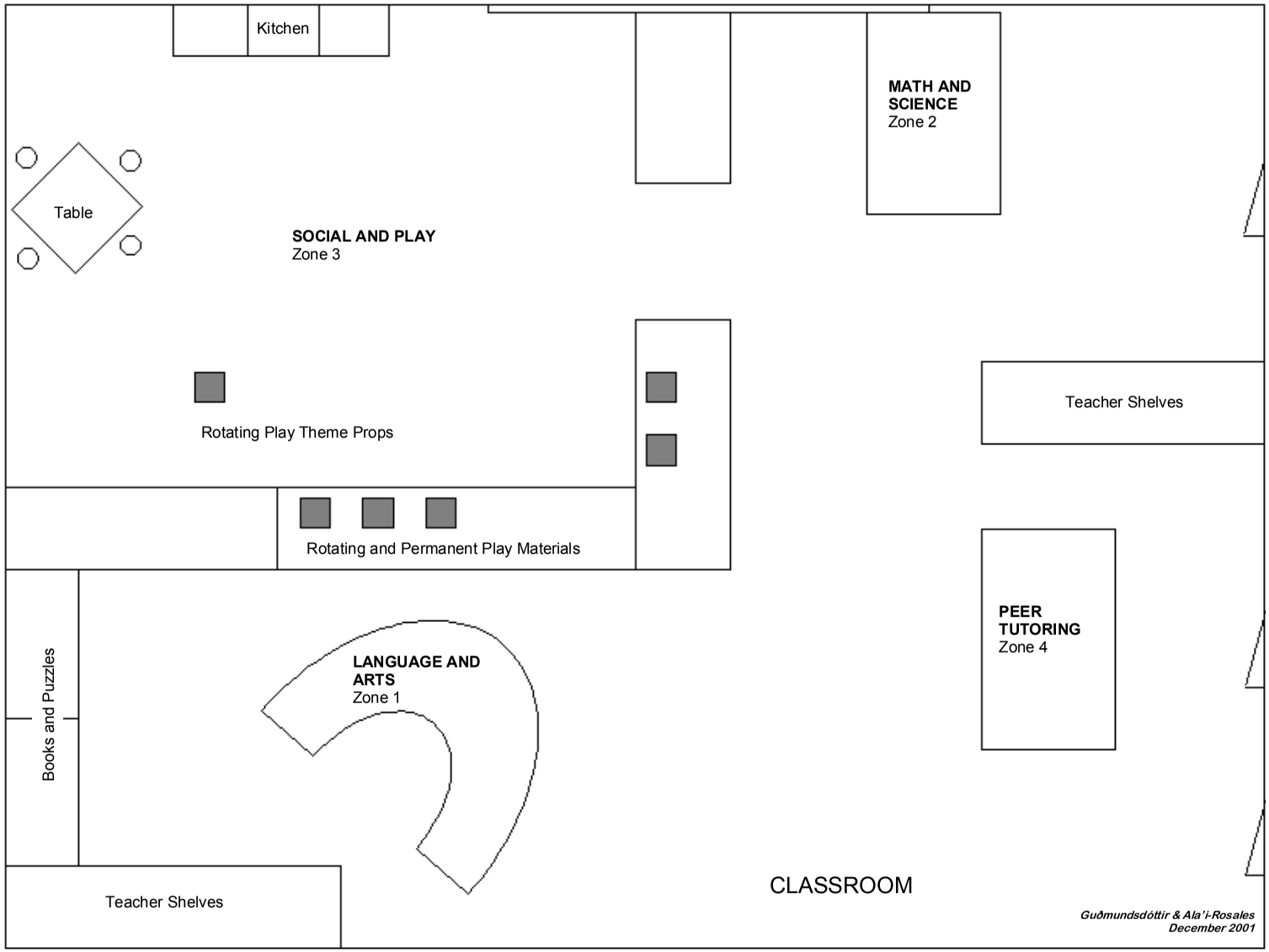
	Simple Manipulation			Functional Manipulation			Symbolic Toy Play			Symbolic Role Play		
All Children	**Total**	Un-prompted	Prompted	**Total**	Un-prompted	Prompted	**Total**	Un-prompted	Prompted	**Total**	Un-prompted	Prompted
Mean	**86.2**	86.2	100	**93.8**	86.4	91.4	**96.3**	96.1	93	**90.6**	90.4	97.4
Range	**33-100**	33-100	100	**71.4-100**	50-100	66.6-100	**69.2-100**	69.2-100	50-100	**84.6-100**	0-100	66.6-100

	Sean			Isaac			Jose			Daniel		
Simple Manipulation	**Total**	Un-prompted	Prompted	**Total**	Un-prompted	Prompted	**Total**	Un-prompted	Prompted	**Total**	Un-prompted	Prompted
Mean	**66.5**	66.5	100	**100**	100	100	**76.9**	76.9	100	**93.6**	93.6	100
Functional Manipulation	**Total**	Un-prompted	Prompted	**Total**	Un-prompted	Prompted	**Total**	Un-prompted	Prompted	**Total**	Un-prompted	Prompted
Mean	**91.4**	82.7	73.3	**98.7**	72.2	83.3	**81.5**	76.1	100	**97.5**	90.3	87.7
Symbolic Toy Play	**Total**	Un-prompted	Prompted	**Total**	Un-prompted	Prompted	**Total**	Un-prompted	Prompted	**Total**	Un-prompted	Prompted
Mean	**100**	100	100	**98.7**	97.2	75	**96.2**	96.2	100	**100**	100	100
Symbolic Role Play	**Total**	Un-prompted	Prompted	**Total**	Un-prompted	Prompted	**Total**	Un-prompted	Prompted	**Total**	Un-prompted	Prompted
Mean	**100**	100	100	**97.2**	95.5	83.3	**100**	100	100	**100**	100	100

	Sophia			Colette			Thomas		
Simple Manipulation	**Total**	Un-prompted	Prompted	**Total**	Un-prompted	Prompted	**Total**	Un-prompted	Prompted
Mean	**97.5**	97.5	100	**94.4**	94.4	100	**63.1**	63.1	100
Functional Manipulation	**Total**	Un-prompted	Prompted	**Total**	Un-prompted	Prompted	**Total**	Un-prompted	Prompted
Mean	**97.2**	97	100	**93.3**	93.3	100	**100**	100	100
Symbolic Toy Play	**Total**	Un-prompted	Prompted	**Total**	Un-prompted	Prompted	**Total**	Un-prompted	Prompted
Mean	**100**	100	80	**96.8**	96.7	100	**69.2**	69.2	100
Symbolic Role Play	**Total**	Un-prompted	Prompted	**Total**	Un-prompted	Prompted	**Total**	Un-prompted	Prompted
Mean	**100**	100	100	**92.3**	42.3	100	**100**	100	100

APPENDIX B

CLASSROOM DIAGRAM


Kitchen
MATH AND SCIENCE
Zone 2
Table
SOCIAL AND PLAY
Zone 3
Rotating Play Theme Props
Teacher Shelves
Rotating and Permanent Play Materials
PEER TUTORING
Zone 4
LANGUAGE AND ARTS
Zone 1
Books and Puzzles
Teacher Shelves
CLASSROOM
Guðmundsdóttir & Ala'i-Rosales
December 2001

APPENDIX C

CHILDREN'S ROTATION SCHEDULE

Children's Rotation Schedule

Adapted from the Preschool's Original Rotation Schedule

TIME	SOCIAL/PLAY ZONE	MATH/SCI ZONE	PEER TUTORING ZONE	LANG/ART ZONE
8:50-9:15	**SEAN** PEER **THOMAS** PEER	**DANIEL** PEER PEER PEER	**JOSE** **SOPHIA**	**ISAAC** **COLETTE** PEER PEER
9:15-9:30	**ISAAC** PEER **COLETTE** PEER	**SEAN** PEER PEER	**ISAAC** PEER	**JOSE** PEER **SOPHIA** PEER
9:30-9:45	**JOSE** PEER **SOHPIA** PEER	**ISAAC** **COLETTE** **THOMAS** PEER	**SEAN** PEER	**DANIEL** PEER PEER PEER
9:45-10:00	**DANIEL** PEER **THOMAS** PEER	**JOSE** PEER **SOPHIA** PEER	**ISAAC** **COLETTE**	**SEAN** PEER PEER PEER
10:00-10:15	BATHROOM	BATHROOM	BATHROOM	BATHROOM
10:15-10:30	SNACK	SNACK	SNACK	SNACK
10:30-10:45	CIRCLE	CIRCLE	CIRCLE	CIRCLE
10:45-11:00	MOTOR	MOTOR	MOTOR	MOTOR
11:00-11:15	BATHROOM	BATHROOM	BATHROOM	BATHROOM
11:15-11:30	**SEAN** PEER **THOMAS** PEER	**DANIEL** PEER PEER PEER	**JOSE** **SOPHIA**	**ISAAC** **COLETTE** PEER PEER
11:30-11:45	**ISAAC** PEER **COLETTE** PEER	**SEAN** PEER PEER	**ISAAC** PEER	**JOSE** PEER **SOPHIA** PEER
11:45-12:00	**JOSE** PEER **SOHPIA** PEER	**ISAAC** **COLETTE** **THOMAS** PEER	**SEAN** PEER	**DANIEL** PEER PEER PEER
12:00-12:15	**DANIEL** PEER **THOMAS** PEER	**JOSE** PEER **SOPHIA** PEER	**ISAAC** **COLETTE**	**SEAN** PEER PEER PEER
12:15-12:30	BATHROOM	BATHROOM	BATHROOM	BATHROOM
12:30-12:45	LUNCH	LUNCH	LUNCH	LUNCH
12:45-1:00	CIRCLE TIME	CIRCLE TIME	CIRCLE TIME	CIRCLE TIME

APPENDIX D

PLAY AND SOCIAL SKILLS SURVEY

PLAY AND SOCIAL SKILLS SURVEY

Please circle all the types of play that _____ engages in and indicate the amount of time he/she engages in each type of play and answer the questions about the child´s social skills

PLAY SKILLS

Simple Play — *Physically manipulating play materials but not according to their conventional function. Example: Waving, shaking, banging or mouthing toys.*

Never Seldom Occasionally Always

Conventional Play — *Using play materials according to their conventional characteristics or function. Example: Building a tower with blocks, driving a car.*

Never Seldom Occasionally Always

Pretend Play — *Assigning thematic or imaginative function to play materials or pretending to be something or someone else. Example: Holding a banana and talking into it as if it is a telephone, pulling a string of beads on the floor as if it is a snake. Pretending to be Superman.*

Never Seldom Occasionally Always

SOCIAL SKILLS

Initiates and responds to other children?

None Some Several Almost All

Has some common interests with other children?

None Some Several Almost All

Is patient with less skilled children?

Never Seldom Occasionally Always

APPENDIX E

LIST OF PLAY MATERIALS

LIST OF PERMANENT AND ROTATING MATERIALS

Play Materials

Blocks (b)

- Wooden Blocks
- Mega Blocks
- Legos (Duplos)

Manipulatives (m)

- Silly guys
- Builders and benders
- K-Nex
- Lincoln Logs

Figurines and dolls (f)

- Dinosaurs
- Family Dolls
- Action figures

Vehicles (v)

- Cars
- Trucks
- Helicopter
- Tractors
- Toy garage

Play Theme Props (t)

- *Kitchen*
  i. Food
  ii. Cups, plates, dishes, pots and pans
  iii. Utensils: Spoons, forks, ladle etc.
  iv. Stove, sink and cupboards

- *Fast Food Restaurant*
  i. Hamburger sheets
  ii. Big Mac Boxes
  iii. Chicken McNugget Boxes
  iv. French Fries Boxes
  v. Happy Meal Bags
  vi. Brown Bags
  vii. Soft Drink cups

- *Post Office*
  i. Packages/boxes
  ii. Envelopes
  iii. Forms
  iv. “Stamps” (Stickers)

- *Firefighters*
  i. Jacket
  ii. Walkie-Talkie
  iii. Hat
  iv. Ax
  v. Extinguisher

- *Construction Workers*
  i. Hat
  ii. Tools
  iii. Hammer
  iv. Drill
  v. Wrench
  vi. Screwdriver
  vii. Plyer
  viii. Saw
  ix. Measure

- *Flower Shop/Gardening*
  i. Flowers
  ii. Pots/Bucket
  iii. Turkey ‘baster’
  iv. Money
  v. Cashier Tray

- *Doctor*
  i. Stethoscope
  ii. Otoscope
  iii. Syringes
  iv. Blood Pressure Meter
  v. Plastic Band Aid
  vi. Real Band-Aids
  vii. Band-Aid Box
  viii. Thermometer
  ix. Gloves
  x. Hats
  xi. Shoes

- *Puppet Show*
  i. Puppets

- *Other materials*
  i. Materials that do not belong to the categories listed above

Permanent and Rotating Materials

PERMANENT	ROTATING
Kitchen Furniture	
Table	
Chairs	
House	
BLOCKS	
Wooden Blocks	Legos/Duplos
	Mega Blocks
MANIPULATIVES	
Lincoln Logs	K-Nex
	Silly Guys
	Builders and Benders
FIGURINES AND DOLLS	
Family Dolls	Dinosaurs
	Action Figures
VEHICLES	Cars and Trucks
	Toy garage
PLAY THEMES	
Kitchen	Firefighters
- toy food	Construction Workers
- cups, plates, dishes, utensils	School
	Post Office
	Fast Food Restaurant
	Gardening
	Puppet Show
	Doctor

APPENDIX F

TOY ROTATION SCHEDULE

Toy Rotation Schedule

	Session 1	*Session 2*	*Session 3*	*Session 4*
Play Materials	**Monday** April 23rd	**Tuesday** April 24th	**Wednesday** April 25th	**Thursday** April 26th
BLOCKS	*Legos*	*Mega Blocks*	*Legos*	*Mega Blocks*
MANIPULATIVES	*K-Nex*	*Silly Guys*	*Builders and Benders*	*K-Nex*
VEHICLES	*Cars and Trucks + Garage*	*Cars and Trucks*	*Cars and Trucks + Garage*	*Cars and Trucks*
FIGURINES AND DOLLS	*Dinosaurs*	*Action Figures*	*Dinosaurs*	*Action Figures*
PLAY THEMES	*Firefighters*	*Puppet Show*	*Gardening*	*Construction Workers*

		Session 5	*Session 6*
Play Materials	**Monday** April 30th	**Tuesday** May 1st	**Wednesday** May 2nd
BLOCKS	NO SCHOOL	*Mega Blocks*	*Legos*
MANIPULATIVES		*Builders and Benders*	*K-Nex*
VEHICLES		*Cars and Trucks*	*Cars and Trucks + Garage*
FIGURINES AND DOLLS		*Action Figures*	*Dinosaurs*
PLAY THEMES	*Post Office*	*Fast Food Restaurant*	*Doctor*

APPENDIX G

GENERAL BASELINE PROCEDURES:

TEACHER INFORMATION AND SPECIFIC INSTRUCTIONS

General Baseline Procedures

Teacher Information

Purpose

I am interested in studying children´s play. Specifically, I am interested in the ways that we can increase the complexity and duration of dramatic play through behavior analytic interventions. You may have noticed that the room has been rearranged and that play materials have been added and controlled to some degree. This was to prepare an appropriate play environment that, according to the early childhood literature, is likely to produce enjoyable play interactions. The second step is to collect standardized measures in order to assess children´s play behavior across time. A general baseline (before intervention) protocol is included for your information.

General Baseline Procedures

Overall, zone leaders and facilitators should continue the types of methods currently in effect: 1) Prompt as specified by the child´s treatment program or classroom procedure; 2) Praise appropriate behavior; 3) Follow classroom procedures for inappropriate behavior; 4) Redirect child back to zone if they leave without permission.

Following data analysis, I will meet with supervisors, case managers, and parents to discuss specific intervention procedures for each of the children with autism.

When

Taping for baseline will start on Monday April 9th 2001 and will take place during both zone times from 9:00 to 10:00 and 11:00-12:00. Each child´s play interaction will be taped for 15 minutes. Please be sure your child is in the area at the assigned time and that each child stays for the full 15 minutes (See attached schedule).

Who

All of the children with autism and four of the typically developing children will be taped. Each target child will be taped playing with 2-3 other peers in the social zone. The facilitator and the zone leader may also be taped when assisting or participating in play.

Toys - Play themes

The following materials will be available during social zones:
Blocks: Wooden Blocks, Mega Blocks, Legos
Manipulatives: Lincoln Logs, K-Nex, Silly Guys, Builders and Benders
Figurines and Dolls: Family Dolls, Dinosaurs, Action Figures
Vehicles: Cars and Trucks
Prop boxes for several play themes: Kitchen, Firefighters, Construction Workers, School, Post Office, Fast Food Restaurant, Flowershop, Puppet Show and Doctor.

As we are able to purchase new materials or donations are made, we will increase the pool of available activities.

General Baseline Procedures

Specific Instructions to Teachers

Overall, zone leaders and facilitators should continue the types of methods currently in effect:

1) Prompt as specified by the child´s treatment program or classroom procedure

2) Praise appropriate behavior

3) Follow classroom procedures for inappropriate behavior:
   - Hitting other children
   - Taking toys from other children without permission
   - Throwing toys
   - Ripping materials apart
   - Jumping on materials

4) Redirect child back to zone if they leave without permission.

APPENDIX H

OBSERVATION PROTOCOL

Measurement System for Monitoring Play in Young Children

General Observation Protocol

Kristín Guðmundsdóttir, B.A. & Shahla Ala'i-Rosales, Ph.D., BCBA
December 2001

Observation Situation

Sessions take place in a preschool classroom within a play area (Social Zone) that contains play materials, including kitchen furniture, a small table and chairs. Materials in the play area include blocks, manipulatives, figurines and dolls, vehicles, kitchen set, play theme props and other typical preschool toys. The child with autism, peers, a preschool teacher (zone leader) and a facilitator may all be in the play area at the same time. Each child plays with the play materials in the play area and/or engages in symbolic toy play and symbolic role play.

General Observation Rules

Observer will take data for 5 minutes on number and duration of play themes, number of different types of play actions. Data on the toys the child uses during play and roles the child is engaged in during Symbolic Role Play will also be recorded. Four types of play will be recorded: Whether the child is manipulating play materials according to their conventional function (Functional Manipulation) or not (Simple Manipulation), whether the child assigns a thematic or imaginative function to play materials (Symbolic Toy Play) or whether he or she pretends to be something or someone else (Symbolic Role Play). Each type of play will be recorded separately on separate datasheets. Some play actions may be scored as two different types of play, that is, a play action can be scored as Functional Manipulation and Symbolic Toy Play on the one hand and as Symbolic Toy Play and Symbolic Role Play on the other hand (See Materials List p. 13). However, when a play action is scored as Simple Manipulation, no other type of play can be assigned to the play action.

Play Summary

Before any data are recorded, the observer records general information about the child's play on the datasheet marked *Play Summary*. The observer watches 5 minutes of the child's play and records whether the child is engaged in any of the four types of play actions during the observation period. The observer notes the topography of the child's play actions and checks appropriate boxes on the *Play Summary.* On the same sheet, the toys the child uses during play and roles the child is engaged in are also listed. Finally the observer also lists play themes the child is engaged in and records the duration of each play theme (See Play Summary). After this has been completed, the observer watches the tape again and takes data on the frequency of each type of play action the child was engaged in according to the *Play Summary.*

Play Actions

Data is taken separately on each type of play action. Each type of play action has a separate datasheet with definitions, scoring rules and example. Observer records unprompted and prompted play actions as they are defined below. Unprompted play actions are marked by slashing each box on the datasheet, and prompted play actions are marked by marking an "x" in each box. Specific scoring rules are included in each response description and data sheet (pages 4-11).

Prompts to Specific Play Types

Play actions that are immediately *preceded* by assistance from adult that guides the child to engage in a particular type of play action. Play actions are also scored as prompted when the adult provides assistance *while* the child is engaged in a particular play action. Assistance from adult to engage in a particular type of play action includes verbal prompts (instructions to engage in particular play action, making a verbal statement that assigns an imaginative function to play material or assigns a role to the child, providing a verbal model or asking a question), demonstrations of play actions or physical guidance. Play action is scored as prompted if child does not engage in any other behavior or other type of action in between the adult's assistance and the particular type of play action that is being recorded.

Examples of Play Specific Prompts

1) Adult says to child, "You are the doctor" tor" and the child takes another child's temperature with a toy thermometer *(Verbal Instruction – Symbolic Role Play)*
2) Adult says to child "Give me a shot" and and child pokes a syringe into adult's arm *(Verbal instruction – Functional Manipulation)*
3) Adult asks child who holds a fire extinguisher: "Are you a fireman?" and the child starts swinging the extinguisher and making spraying sounds *(Question – Symbolic Role Play)*
4) Adult moves a table towards child and and says: "This is your doghouse" and child crawls under he table" *(Verbal statement – Symbolic Role Play)*
5) The adult puts her hand over the child's child's hands holding a fork and physically moves the child's hand to this mouth *(Physical guidance – Functional Manipulation and Symbolic Toy Play)*
6) Child holds a Lego in his hand and adult adult places his hand over the child's and moves his hand in order to put the Lego on top of another Lego *(Physical guidance – Functional Manipulation)*
7) Adult points to Fast Food Restaurant box box and says: "eat this" and child puts fork into box and brings fork to his mouth *(Verbal instruction – Functional Manipulation and Symbolic Toy Play)*
8)Adult puts a puppet in child hands, lays her hands over the child's hand and physically guides the child to squeeze the nose of the puppet (*Physical guidance – Simple Manipulation*)
9) Adult puts her hands over the child's hands and fingers and physically guides him to tap a toy plate *(Physical guidance – Simple Manipulation)*

Exclusions

General prompts from adult to play but that are not directed towards assisting or guideing the child to engage in a particular type of play action:
1) Offering and/or handing play materials to child: Adult says to child: "Here, take this one" and hands child a syringe and the child gives peer a shot
2) Arranging play materials: Adult moves cars closer to child and child takes each of them and pushes them.
3) Pointing to or touching play materials: Adult points to a tower construction and child places a block on top of the construction.
4) Pointing to play materials and giving instructions to play with materials: Adult points to the container with Legos and asks the child: "Do you want to play with the blocks?" And the child starts building a tower.

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Each 5-minute observation period is divided into 1-minute intervals and during each 1-minute interval the observer records each occurrence of the play action by marking the boxes on the datasheet. When taking data on Simple Manipulation, Functional Manipulation and Symbolic Toy Play the observer writes the designated letter of the category of the play material the child uses during each play action, in the box directly below the one he slashed. When taking data on Symbolic Role Play, the observer writes the designated letter of the role the child is engaged in, in the box directly below the one he slashed.

Timer

Set the timer for 1-minute, ´count down´. The timer should beep every minute and then start counting down the next minute. For the first minute tally the response in the first row of the data sheet and then go down to the second row for the next minute and so on for five minutes.

Tallying Data

After data has been taken on each type of play, the number of all play actions are tallied and recorded in the Total Box. The number of unprompted and prompted play actions are also tallied separately and recorded in the corresponding boxes. Finally, the number of play actions with each type of toy or role are also tallied and recorded in the appropriate boxes at the bottom of each data sheet.

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PLAY SUMMARY

Child: _____ Observer:_____ Date: _____ Page ____ of ____

Session Date: _____ Tape: _____ Time: ____ ____ ____ to____ ____ ____ Phase: _____

Observation and Scoring Rule

After observing 5 minutes of the child's play, fill in information about the types of play the child was engaged in during each observation period. Check the box besides each type of play if it occurred at least once during the 5 minute observation period. List all roles the child engages in during Symbolic Role Play. List all play themes that occur during the observation period and record the time when the play theme started and ended. List all toys the child manipulates during the observation period. Assign each role the child engages in and the toys a letter and write the letter in the parentheses.

Play Theme

Play theme is listed if the child is engaged in two or more sequences of symbolic toy play actions or symbolic role play actions directed to the same set of materials or if the child makes a verbal statement about an activity or an event that is happening or is about to happen (Birthday Party), an imaginary location (Grocery Store) or a situation (Thunderstorm) that the child is in. Play theme is listed when any of these symbolic play actions or verbalizations from the child occur alone, but also when adult or peer makes such verbalizations and they are preceded or followed by functional or symbolic play actions by the child that are related to the verbalizations. Note that when child is engaged in a functional play action, play theme is only listed if that action is preceded or followed by a related verbalization as described above.

The onset of one episode of play theme is counted when the child starts interacting with a new set of materials such as by touching an object. The onset is also counted when the child, peer or adult starts verbalizing a particular activity, event, location or situation or child uses functional or symbolic play actions that are related to any of the verbalizations above but before these verbalizations occur. The offset of one episode is counted when the child stops interacting with the previous set of materials, starts verbalizing about a different activity, event, location or situation or states the activity is changing. The offset is also counted after a period of 30 seconds has elapsed without the child making any verbal statement about an activity, event, location or situation, or without the child engaging in any symbolic toy play or symbolic role play, or functional play actions that have been preceded by a related verbalization about an activity, event, location or situation.

Note: Play themes can overlap, that is, more than one play theme may occur at the same time.

Simple Manipulation		**Toys** _____( ) _____( ) _____( )
Functional Manipulation		_____( ) _____( ) _____( )
Symbolic Toy Play		_____( ) _____( ) _____( ) _____( ) _____( ) _____( )
Symbolic Role Play		**Roles** _____ ( ) _____ ( ) _____ ( ) _____ ( ) _____ ( ) _____ ( )
Play Themes *Play Theme of the Day:* _____		**Play Themes** _____ From ____ ____ ____ to ____ ____ ____ _____ From ____ ____ ____ to ____ ____ ____ _____ From ____ ____ ____ to ____ ____ ____ _____ From ____ ____ ____ to ____ ____ ____ _____ From ____ ____ ____ to ____ ____ ____ _____ From ____ ____ ____ to ____ ____ ____ _____ From ____ ____ ____ to ____ ____ ____

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SIMPLE MANIPULATION

Child: _____ Tape: _____ Phase: _____ Observer:_____

Session Date: _____ Time: ___ ___ ___ to___ ___ ___ Scoring Date: _____

Play Action
When counting all play actions, the onset of an action will be counted when the child touches an object. The offset of an action will be counted when the child drops or lets go of the object he is manipulating, does something different with the object, touches or manipulates another object, stops making contact with a second object or furniture, or the teacher or peer intervenes or stops the action in any way.

Simple Manipulation
Child physically manipulates, does something with, play materials but does not make contact with them according to their conventional function, within context of play or makes a verbal statement attaching an imaginative function to the play material.

Scoring Rule
Slash one box after each unprompted play action occurs. Mark "x" in one box after each prompted play action occurs. Write the letter of the category of the play material that the child uses during that play action in the box directly below the one you slashed. List the materials that fall into the category of 'Other Materials' at the bottom of the page. When child uses materials from more than one category, write letters of both categories.

Note
Do *not score play action when the view of the child's hands or the object he is manipulating is blocked or materials blend into child's clothing so the play action can not be seen clearly.*

Materials
b - Blocks **m** - Manipulatives **f -** Figurines and Dolls **v** - Vehicles **t -** Play Theme Props **o -** Other Materials

1																								
Materials																								
2																								
Materials																								
3																								
Materials																								
4																								
Materials																								
5																								
Materials																								

Unprompted Play Actions ☐ **Prompted Play Actions** ☐ **TOTAL Simple Manipulation** ☐

Other Materials

_____
_____
_____

With Blocks (b) ☐ With Vehicles (v) ☐
With Manipulatives (m) ☐ With Play Theme Props (t) ☐
With Figurines and Dolls (f) ☐ With Other Materials (o) ☐

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Simple Play Action

Examples of distinct actions

1) Child pulls a Lego off a tower of Legos (one play action) and then pulls another Lego off the tower (another play action)
2) Child is building with Legos, adding pieces of Legos to a block construction, then he bangs one piece of Lego on top of the construction without actually adding it until adult intervenes, by taking child's hand (one play action)
3) Child is building a tower of Legos (Functional Manipulation) and then takes the tower with one hand and waves it until he drops the tower (one play action)
4) Child has a puppet on her hand and puts her fingers in the puppet's 'mouth' and touches and strokes the surface (one play action) then she grabs the nose of the puppet and squeezes it a couple of times until she finally lets go (another play action)
5) Child takes a car in his hand, touches one wheel on the car and spins it, (one play action) then he touches another wheel and spins that one too (another play action)
6) Child is sitting at a table playing Fast Food Restaurant, peer pushes a French Fries box to the child and says "Here are some French Fries", and the child taps the box with his fingers (one play action)
7) Child is playing with a couple of pieces of manipulatives that have been linked together. First he puts the material up to his mouth (ona play action) and then he twists the pieces between his two fingers (another play action), after that he tries to pull them apart (third play action) and finally takes the piece in one hand and taps it into the other hand (fourth play action)

Simple Manipulation

Examples of topography

1) Turning play materials in their hands: Child holds a toy hammer and turns it in his hands
2) Banging play materials: Child takes a pot and a spoon and bangs them together
3) Waving play materials but in absence of a verbal statement attaching an imaginative function to the material or within the context of conventional use of the material: Child picks up a tower of blocks he has been building and waves it
4) Shaking play materials without context of play or without directing it to an appropriate toy
   a) Child takes salt shaker in his hand and shakes it but without directing it to toy food or a play material that represents food.
   b) Child picks up block and shakes it
5) Spinning play materials: Child places a K-Nex stick on top of shelf and spins it on the shelf surface
6) Tapping play materials: Child picks up a plate and taps it
7) Placing play materials on parts of their or other's body in the absence of a verbal statement attaching a theme to this activity
8) Mouthing play materials: Child takes a toy egg and mouths it
9) Putting spoon or fork into mouth with sucks instead of repetitive mouthing
10) Sucking, chewing or biting play materials other than toy food: Child puts fork or spoon in his mouth and sucks, chews or bites it in the absence of a movement that indicates that the child is picking up imaginary food with the fork or spoon
11) Rubbing play materials together: Child takes two pieces of Builders and Benders, and rubs them together without actually linking them
12) Digging through play materials: Child puts his hand in a container of blocks and digs through the pile of blocks
13) Lining up play materials: Child lines up two or more dinosaurs in a straight line or group
14) Putting play materials in a pile with hands: Child pulls together blocks that lie scattered on a floor and makes a pile out of the blocks. Child takes play money and puts in a pile
15) Pulling play materials apart that have been linked together: Child pulls apart two Legos that are linked together: Child pulls off a Lego from a tower of Legos
16) Squeezing play materials: Child has a puppet on her hand and squeezes it's nose
17) Pressing play materials together: Child holds two pieces of manipulatives and presses them together
18) Turning or twisting play materials: Child holds a piece of two manipulatives that have been linked together and turns and twists them with his fingers

Exclusions

1) Touching, holding or coming into contact with a toy without manipulating it in any way (Not scored)
2) Pushing toy away (Not scored)
3) Picking up a toy (Not scored)
4) Dropping a toy (Not scored)
5) Dumping contents from storage container (Not scored)
6) Any forceful application of stimulus materials, throwing toys and kicking toys (Not scored)
7) Placing play materials in a storage container: Child puts blocks in a storage bin (Not scored)
8) Child puts play money in a cash tray (Functional Manipulation).
9) Shaking a rattle (Functional Manipulation)
10) Child puts flowers in a bucket (Functional Manipulation)
11) Child puts pot on toy stove (Functional Manipulation)
12) Shaking shalt shaker over toy food (Functional Manipulation and Symbolic Toy Play)
13) Child puts an empty cup to his mouth (drinks from an empty cup) (Functional Manipulation and Symbolic Toy Play)
14) Child loads plane into Lego car (Symbolic Toy Play)
15) Child holds toy food, puts it up to his or her mouth without touching the food and moves his lips as if chewing the food (Functional Manipulation)
16) Child puts blocks together, moves them back and forth on the floor and makes engine sounds (Symbolic Toy Play)
17) Child squeezes balloon of blood pressure meter (Functional Manipulation)
18) Child hits objects with fire ax (Functional Manipulation)
19) Child waves a wand and says "I'm the good fairy" (Symbolic Role Play)
20) Child puts imaginary food on plate with ladle and then puts the plate up to his mouth (Symbolic Toy Play)

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FUNCTIONAL MANIPULATION

Child: _____ Tape: _____ Phase: _____ Observer:_____

Session Date: _____ Time: ____ ____ ____ to____ ____ ____ Scoring Date: _____

Play Action
When counting all play actions, the onset of an action will be counted when the child touches an object. The offset of an action will be counted when the child drops or lets go of the object he is manipulating, does something different with the object, touches or manipulates another object, stops making contact with a second object or furniture, or the teacher or peer intervenes or stops the action in any way.

Functional Manipulation
Child makes physical contact with play materials according to their conventional characteristics or function such as (re)creating combinations of objects, pushing and pulling toys, and generally manipulating objects according to their unique characteristics such as pushing, pulling and turning parts of a toy to activate sounds, motion or to complete the designed activity.

Scoring Rule
Slash one box after each unprompted play action occurs. Mark "x" in one box after each prompted play action occurs. Write the letter of the category of the play material that the child uses during that play action in the box directly below the one you slashed. List the materials that fall into the category of 'Other Materials' at the bottom of the page. When child uses materials from more than one category, write letters of both categories.

Note
Do not score play action when the view of the child's hands or the material he is manipulating is blocked or the materials blend into child's clothing so the play action can not be seen clearly.

Materials
b - Blocks **m** - Manipulatives **f -** Figurines and Dolls **v** - Vehicles **t -** Play Theme Props **o -** Other Materials

1																								
Materials																								
2																								
Materials																								
3																								
Materials																								
4																								
Materials																								
5																								
Materials																								

Unprompted Play Actions ☐ **Prompted Play Actions** ☐ **TOTAL Functional Manipulation** ☐

Other Materials
_____
_____
_____

With Blocks (b) ☐ With Vehicles (v) ☐
With Manipulatives (m) ☐ With Play Theme Props (t) ☐
With Figurines and Dolls (f) ☐ With Other Materials (o) ☐

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Functional Play Action

Examples of distinct actions

1) Child puts two blocks together (one play action)
2) Child holds a tower of blocks in his hand, he puts a block on one end of the tower (one play action) and while still holding the tower, he takes another block and adds it to the other end (another play action - touches another object)
3) Child places block on top of a block construction with one hand but doesn't let go of the block, (one play action) then he places another block on a different place of the construction with the other hand, and then lets go of both blocks at the same time (another play action - touches another object)
4) Child drives a car back and forth, pauses for a moment and then continues driving the car back and forth and finally lets go of the car (one play action)
5) Child drives a cargo truck, drops it (one play action) and picks up a car and loads it on the truck (another play action)
6) Child holds blocks in its hands and peer grabs the block from him (one play action - peer intervenes the activity)
7) Child puts toy food in pot (one play action) and then puts lid on the pot (another play action - touches another object)
8) Child pulls a doctor's glove half way on hand and lets go of the glove with one hand but still has it on the other and then the pulls the glove all the way on the hand (one play action)
9) Child moves vacuum cleaner back and forth on the floor, (one play action) then stops and raises the handle of the vacuum cleaner to upright position (does something else with the object) and then starts moving the vacuum cleaner back and forth on the floor again (another play action)
10) Child holds action figure in one hand and adjusts feet and arms with the other hand (one play action)
11) Child pulls syringe piece from syringe socket (one play action) and then gives peer a shot (another play action - does something different with the object)
12) Child saws a train made out of blocks with a toy saw, she lifts the saw off the train for a while (one play action - stops making contact with a second object), then she starts sawing the train again and finally drops the saw on the floor (another play action - drops the object)
13) Child is drawing lines with a chalk on a chalk bord, then he picks up an eraser while still holding the chalk (one play action - touches another object), he erases the lines on the chalkboard and then drops the eraser (another play action - drops the object)
14) Child pulls puppet glove on hand (one play action) and then starts moving its mouth and head (another play action - does something different with the object)
15) Child is playing with toy garage. He holds a car in one hand and pulls the elevator on the garage up with the other hand (one play action). Then while still keeping his hand on the elevator the child slides the car down the runway on the garage (another play action - manipulates another object) and finally he pushes the elevator down (third play action - manipulates another object)

Functional Manipulation

Examples of topography

1) Child builds a tower with blocks
2) Child drives a car
3) Child places car on garage so it slides down.
4) Child places blocks in a dump truck
5) Child places or drops toy food in a pot, dish, on a plate or in a Fast Food Restaurant Box
6) Child stirs with a ladle in a pot
7) Child stirs toy food in a pot
8) Child puts cup to his mouth (drinks from a cup)
9) Child puts spoon or fork in his mouth
10) Child puts toy food into his mouth, bites, chews or sucks or licks the food.
11) Child places pot or dish on toy stove
12) Child turns the knobs of a toy sink
13) Child turns knobs on a play stove
14) Child puts together car parts
15) Child pulls doll's switch and doll cries
16) Child puts dishes and plates on table
17) Child puts on fireman hat
18) Child pulls doctor's gloves on hand
19) Child puts play money into cashier tray
20) Child gives peer a shot with a syringe
21) Child places stethoscope piece on peer's heart
22) Child squeezes balloon of blood pressure meter
23) Child adjust limbs of action figure
24) Child makes action figure or dinosaur walk, sit down, climb or fight or fly
25) Child pushes siren button on a fire truck
26) Child moves fireextinguisher around with his hands
27) Child hits objects with fire ax
28) Child places flower in a bucket
29) Child draws, makes lines on chalkboard with chalk
30) Child holds doll in it´s arms and cradles it
31) Child shakes toy salt or pepper shaker over food
32) Child pulls on a puppet glove
33) Child has puppet glove on hand and moves it´s mouth and head around

Exclusions

1) Child takes clothes, hats, shoes, gloves and other accessories off (Not scored)
2) Child throws toys (Not scored)
3) Hitting another object with play materials but not within context of play: Child hits block structure with toy drill (Not scored)
4) Placing utensils in dish, cup, pot or on plate (Not scored)
5) Child takes lid off pot or dish (Not scored)
6) Child pulls Legos apart (Simple Manipulation)
7) Child rubs blocks together (Simple manipulation)
8) Placing Legos together without actually linking them (Simple Manipulation)
9 Child holds toy food, puts it up to his or her mouth *without touching the food* and moves his lips as if chewing the food
10) Sucking, chewing or biting other play materials than toy food: Child puts fork or spoon in his mouth and, sucks, chews or bites it in the absence of a movement that indicates that the child is picking up imaginary food with the fork or spoon (Simple Manipulation)
11) Putting spoon or fork into mouth with sucks instead of repetitive mouthing (Simple Manipulation)
12) Child picks up imaginary food from a Fast Food Restaurant box an brings his fingers to his mouth (Symbolic Toy Play)
13) Child stirs K-Nex stick in a dish (Symbolic Toy Play)
14) Child extends familiar actions to doll figures, with the child as agent of the activity such as putting cup to a doll´s mouth (Symbolic Toy Play)

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SYMBOLIC TOY PLAY

Child: _____ Tape: _____ Phase: _____ Observer:_____

Session Date: _____ Time: ____ ____ ____ to____ ____ ____ Scoring Date: _____

Play Action

When counting all play actions, the onset of an action will be counted when the child touches an object or makes a verbalization or vocalization or engages in some type of physical movements. The offset of an action will be counted when the child drops or lets go of the object he is manipulating, does something different with the object, touches or directs his actions to another object, stops making contact with a second object or furniture, makes a different verbalization or vocalization, engages in different physical movements or teacher or peer intervenes or stops the action in any way.

Number of actions: A physical movement and a verbalization or vocalization that immediately precedes or follows the movement and that makes the movement a symbolic toy play action are scored as *one play action*. Other movements that occur later during the observation period and are same or similar to the previous movement are scored as separate play actions.

Symbolic Toy Play

Child assigns thematic or imaginative function to play materials or behaves as if an absent object is present. The child does this by verbalizing/vocalizing the thematic/imaginative function, and/or by using movements to indicate the presence of an absent object or an activity or specific function, such as the child using one object to represent another object, attributing false or absent properties to an object, assigning a character to an object or assigning properties to an object that is absent.

Scoring child's movements as symbolic toy play when supported by his own vocalizations or verbalizations:

Child's movements are scored as symbolic toy play when vocalizations/verbalizations that support the movements occur within the 5 minute observation period.

Scoring child's movements as symbolic toy play when supported by adult's or peer's vocalizations or verbalizations:

When the child doesn't use verbalizations/vocalizations to indicate the thematic/imaginative function, the child's movements are scored as symbolic toy play when an adult or peer that is present, vocalizes or verbalizes the imaginative/thematic function *before or while* the child engages in the response.

Scoring child's movements as symbolic toy play when no vocalizations or verbalizations (from child or adult) take place:

Child's movements are scored as symbolic toy play when the child relates his or her movements to a physical object (play materials or clothes) which attaches an imaginative function to the movement or by which the child's movements animate the object or assign the object another property.

Scoring Rule

Slash one box after each unprompted play action occurs. Mark "x" in one box after each prompted play action occurs. Write the letter of the category of the play material that the child uses during the play action in the box directly below the one you slashed or circled. List the materials that fall into the category of 'Other Materials' at the bottom of the page. When child uses materials from more than one category, write letters of both categories.

Note

Do not score play action when the view of the child's hands or the material he is manipulating is blocked, the materials blend into child's clothing and the play action can not be seen clearly, or the child's, peer's or adult's verbalizations can not be understood.

b - Blocks **m** - Manipulatives **f -** Figurines and Dolls **v** - Vehicles **t -** Play Theme Props **o -** Other Materials

1																								
Materials																								
2																								
Materials																								
3																								
Materials																								
4																								
Materials																								
5																								
Materials																								

Unprompted Play Actions ☐ **Prompted Play Actions** ☐ **TOTAL Symbolic Toy Play** ☐

Other Materials

_____

_____

_____

_____

With Blocks (b) ☐ With Vehicles (v) ☐

With Manipulatives (m) ☐ With Play Theme Props (t) ☐

With Figurines and Dolls (f) ☐ With Other Materials (o) ☐

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Symbolic Play Action

Examples of distinct actions

1) Child knocks on bucket that is on peer's head and says :"Anybody home"? (One play action - verbalization makes knocking a symbolic action - bucket as a house). Later during the observation period, child knocks again on the bucket, but without any verbalization (another, same but separate play action)
2) Child puts and empty toy spoon into dish and brings it to her mouth (one play action)
3) Child stirs with a spoon in an empty pot, she then takes the spoon out of the pot (One play action -stops making contact with a second object (the pot)), she puts the spoon again in the pot and starts stirring until she takes the spoon out and places it on the kitchen stove (another play action)
4) Child holds toy fireextinguisher with both hands and swings it at peer, then he takes the fireextinguisher in one hand and walks away with it (one play action - does sth different with the object)
5) Child picks up K-Nex stick and places it against back of shelves in the play area and turns the stick, then lifts the stick from the shelves, turnes around with the stick in her hands to watch her peers play (one play action - stops making contact with second object), and then turns back to the shelves and places the stick against the shelves and turns it until she finally drops the stick (another play action - drops the object)

Symbolic Toy Play

Examples of topography

1) Child holds a banana up to his ear and talks into it
2) Peer says: “Oh no, get the snake!” as child pulls a string of beads on the floor
3) Child holds a pot and warns peer: “It´s hot”.
4) Child holds toy food, puts it up to his or her mouth without touching the food and moves his lips as if chewing the food
5) Child pretends that ´Thomas the Train´ is a character (not just a train on tracks) and says “He´s sad, he can´t move”
6) Child hands a peer an imaginary cookie
7) Child extends familiar actions to doll figures, with the child as agent of the activity such as putting cup to a doll´s mouth
8) Child makes action figure, dinosaur or doll talk, vocalize or sing
9) Child puts doll in chair and says: “Be good while I go to the store”
10) Child sits in chair, holds hands at 10 to 2 position and rocks back and forth as if it is driving a car
11) Child makes crash sounds while dropping play materials on floor
12) Child loads plane into a Lego car
13) Child pulls out shelves under play stove and places toy food on them using them as oven racks
14) Child puts block in pot and stirs it with a spoon
15) Child stirs with a ladle, fork or spoon in an empty pot (behaving as if an absent object is present - food)
16) Child drinks from an empty cup (behaving as if an absent object is present - drink or coffee)
17) Child brings cup to his mouth and says “Aah, this is good coffee”
18) Child puts K-Nex stick on toy pie and sings the “Happy Birthday Song”
19) Child makes action figure or dinosaur walk, sit down, climb or fight or fly
20) Child moves a dinosaur figure as if it is flying and lands it on wooden blocks that lie on the floor and says “He’s going into the water”!
21) Child puts blocks together, moves them back and forth on the floor and makes engine sounds
22) Child swings fire extinguisher and makes sounds as if spraying water
23) Child gives peer a shot with a syringe (behaving as if an absent object is present - the needle in the syringe)
24) Child swings fire extinguisher at an object or person (behaving as if an absent object is present - water from the extinguisher)
25) Child takes dinosaur's temperature, blood pressure and gives him a shot (animating the toy animal)
26) Child crawls into a storage bin and says “I'm going to bed”
27) Child puts her hands and feet against a wall and says: ”We are climbing on the slide” (behaving as if an absent object is present)
28) After climbing on the imaginary slide child says:“This slide is bumpy” (assigning properties to an absent object)

Exclusions

1) Child puts blocks together (without wheels) and moves them back and forth and the floor (Simple Manipulation)
2) Waving play materials but in absence of a verbal statement attaching an imaginative function to the material or within the context of conventional use of the material: Child picks up a tower of blocks he has been building and waves it (Simple Manipulation)
3) Shaking play materials without context of play, action or verbalization or without directing it to an appropriate toy (Simple Manipulation):
   a) Child takes salt shaker in his hand and shakes it but without directing it to toy food or a play material that represents food
   b) Child picks up block and shakes it
4) Mouthing play materials other than toy food: Child takes a plate and licks it (Simple Manipulation)
5) Sucking, chewing or biting play materials other than toy food: Child puts fork or spoon in his mouth and, sucks, chews or bites it in the absence of a movement that indicates that the child is picking up imaginary food with the fork or spoon (Simple Manipulation)
6) Putting spoon or fork into mouth with sucks instead of repetitive mouthing (Simple Manipulation)
7) Child builds car from blocks that have wheels and moves the vehicle back and forth on the floor (Functional Manipulation)
8) Child stirs toy food in a pot (Functional Manipulation)
9) Child puts stethoscope around neck or in ears (Functional Manipulation)
10) Child holds doll in it´s arms and cradles it (Functional Manipulation)
11) Child holds Action Figure in his hand and says: “I'm Buz Lightyear!” (Symbolic Role Play)

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SYMBOLIC ROLE PLAY

Child: _____ Tape: _____ Phase: _____ Observer:_____

Session Date: _____ Time: ____ ____ ____ to____ ____ ____ Scoring Date: _____

Play Action
When counting all play actions, the onset of an action will be counted when the child makes a verbalization or vocalization or engages in some type of physical movements. The offset of an action will be counted when the child stops making a verbalization or vocalization or makes a different verbalization or vocalization, states the activity has ended or is changing, engages in different physical movements, touches or manipulates another object, stops making contact with a second object or furniture, or teacher or peer intervenes or stops the action in any way.

Number of actions: A physical movement and a verbalization or vocalization that immediately precedes or follows the movement and that makes the movement a symbolic role play action are scored as *one play action*. Other movements that occur later during the observation period and are same or similar to the previous movement are scored as separate play actions.

Symbolic Role Play
Child pretends to be something or someone else (a familiar role, a fantasy character or an animal) and/or assigns a role to someone else. The child does this by verbalizing/vocalizing the adopted role or an activity that pertains to the adopted role and/or by using actions before or following the verbalization to indicate an activity or imaginative function that portrays the role.
Scoring child's movements as symbolic role play when supported by his own vocalizations or verbalizations:
Child's movements are scored as symbolic role play when vocalizations/verbalizations that support the movements within the 5 minute observation period.
Scoring child's movements as symbolic role play when supported by peer's or adult's vocalizations or verbalizations:
When the child is engaged in physical movements but doesn't use verbalizations/vocalizations to indicate the adopted role, the child's movements are scored as symbolic role play when an adult or peer that is present, vocalizes or verbalizes the adopted role either by stating the adopted role, an activity that pertains to the adopted role or makes suggestions regarding props that pertain to the role *before or while* the child engages in the response.

Scoring Rule
Slash one box after each unprompted play action occurs. Mark "x" in one box after each prompted play action occurs. Write the letter you have assigned to the role the child is playing in the box directly below the one you slashed.

Note
Do not score play action when the view of the child's hands or body part he is using during play is blocked or the child's, peer's or adult's verbalizations can not be understood.

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Roles																								
2																								
Roles																								
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4																								
Roles																								
5																								
Roles																								

Unprompted Play Actions ☐ **Prompted Play Actions** ☐ **TOTAL Symbolic Role Play** ☐

Roles

_____ ☐ _____ ☐

_____ ☐ _____ ☐

_____ ☐ _____ ☐

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Symbolic Role Play Action

Examples of distinct actions

1) Child says: “I'm a monster”

2) Child says “I'm a monster” and lifts her arms, bends her fingers and directs them to peer or adult (one play action). She then puts her arms dow n and picks up blocks and starts building w ith them. A moment later she lifts her arms, bends her fingers and directs them to peer or adult and then puts his arms dow n (another play action). Again she lifts her arms and makes same or similar monster movements and finally puts her arms dow n (third play action)

3) Child says to one peer: “I'm the mom”, (one play action), “You be the dad” (another play action) and then turns to another peer and says: “you be the baby” (third play action)

Symbolic Role Play

Examples of topography

1) Child puts a blanket on his back, says “I'm Superman” and jumps as if he is flying

2) Child says to his peer: “I'm the mom, you be the sister”

3) Child jumps, flaps his hands and says: “I'm a butterfly”

4) Child says “I'm a dog” and craw ls under a storage bin

5) Adult says to child, “You are the doctor” and the child takes another child’s temperature w ith a toy thermometer

6) Adult asks child w ho holds a fire extinguisher: “Are you a fireman?” and the child starts sw inging the extinguisher and making spraying sounds

7) Peer says to child “ We’re playing McDonalds, you be the w ork crew ” and child takes a Big Mac box and hands it to the peer

8) Child and peer are playing w ith Fast Food Restaurant materials an peer says to child: “I w ant some French Fries” and child says: “We don't sell them here” (verbalization indicating an activity the pertains to the role of the w ork crew)

9) Child and peer are playing w ith Fast Food Restaurant materials and child says to peer: “You w ork here” (child assigning the role of the w ork crew to the peer)

10) Child picks up fireman's jacket and ax and says: “I'm putting out the fire!”

11) Child goes to the kitchen area and starts stirring in some of the containers (pots, dishes and pans) and says: “I'm cooking dinner tonight”

12) Child climbs into storage container and lies dow n. Peer shakes and touches the child and says: “Wake up sister”, and child says: “I'm tired”

13) Adult moves a table tow ards child and says: “This is your doghouse” and child craw ls under he table

Exclusions

1) Child states the activity has ended: “I'm not a monster anymore” (Not scored)

2) Child flaps his hands w ithout any verbalization or vocalization during the observation period that indicates that the child has adopted a role (Not scored)

3) Child flaps his arms and adult says: “Oh, you are a butterfly!” (Not scored - adult verbalization of role follow ing movements)

4) Children are playing doctor w ith an adult facilitating the play. Adult assigns roles to the children, the child as the doctor and his peer as the patient. The child holds a thermometer in his hands and adult says to the child: “Ok, doctor, administer the shot”. Child turns to peer and immediately imitates the adult: “Ok, doctor” (Not scored)

5) Child climbs into storage container and lies dow n. Peer shakes and touches the child and says: “Wake up sister” but child does not respond (Not scored)

6) Child stirs in a pot w ith a ladle but does not make any verbal statement about the activity he or she is engaged in (Symbolic Toy Play)

7) Child sw ings fire extinguisher and makes sounds as if spraying w ater, but does not verbalizes his actions (Symbolic Toy Play)

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Play Materials

Blocks (b)

- Wooden Blocks
- Mega Blocks
- Legos (Duplos)

Manipulatives (m)

- Silly guys
- Builders and benders
- K-Nex
- Lincoln Logs

Figurines and dolls (f)

- Dinosaurs
- Family Dolls
- Action figures

Vehicles (v)

- Cars
- Trucks
- Helicopter
- Tractors
- Toy garage

Play Theme Props (t)

- *Kitchen*
  i. Food
  ii. Cups, plates, dishes, pots and pans
  iii. Utensils: Spoons, forks, ladle etc.
  iv. Stove, sink and cupboards

- *Fast Food Restaurant*
  i. Hamburger sheets
  ii. Big Mac Boxes
  iii. Chicken McNugget Boxes
  iv. French Fries Boxes
  v. Happy Meal Bags
  vi. Brown Bags
  vii. Soft Drink cups

- *Post Office*
  i. Packages/boxes
  ii. Envelopes
  iii. Forms
  iv. "Stamps" (Stickers)

- *Firefighters*
  i. Jacket
  ii. Walkie-Talkie
  iii. Hat
  iv. Ax
  v. Extinguisher

- *Construction Workers*
  i. Hat
  ii. Tools
  iii. Hammer
  iv. Drill
  v. Wrench
  vi. Screwdriver
  vii. Plyer
  viii. Saw
  ix. Measure

- *Flower Shop/Gardening*
  i. Flowers
  ii. Pots/Bucket
  iii. Turkey 'baster'
  iv. Money
  v. Cashier Tray

- *Doctor*
  i. Stethoscope
  ii. Otoscope
  iii. Syringes
  iv. Blood Pressure Meter
  v. Plastic Band Aid
  vi. Real Band-Aids
  vii. Band-Aid Box
  viii. Thermometer
  ix. Gloves
  x. Hats
  xi. Shoes

- *Puppet Show*
  i. Puppets

- *Other materials*
  i. Materials that do not belong to the categories listed above

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APPENDIX I

FIGURES

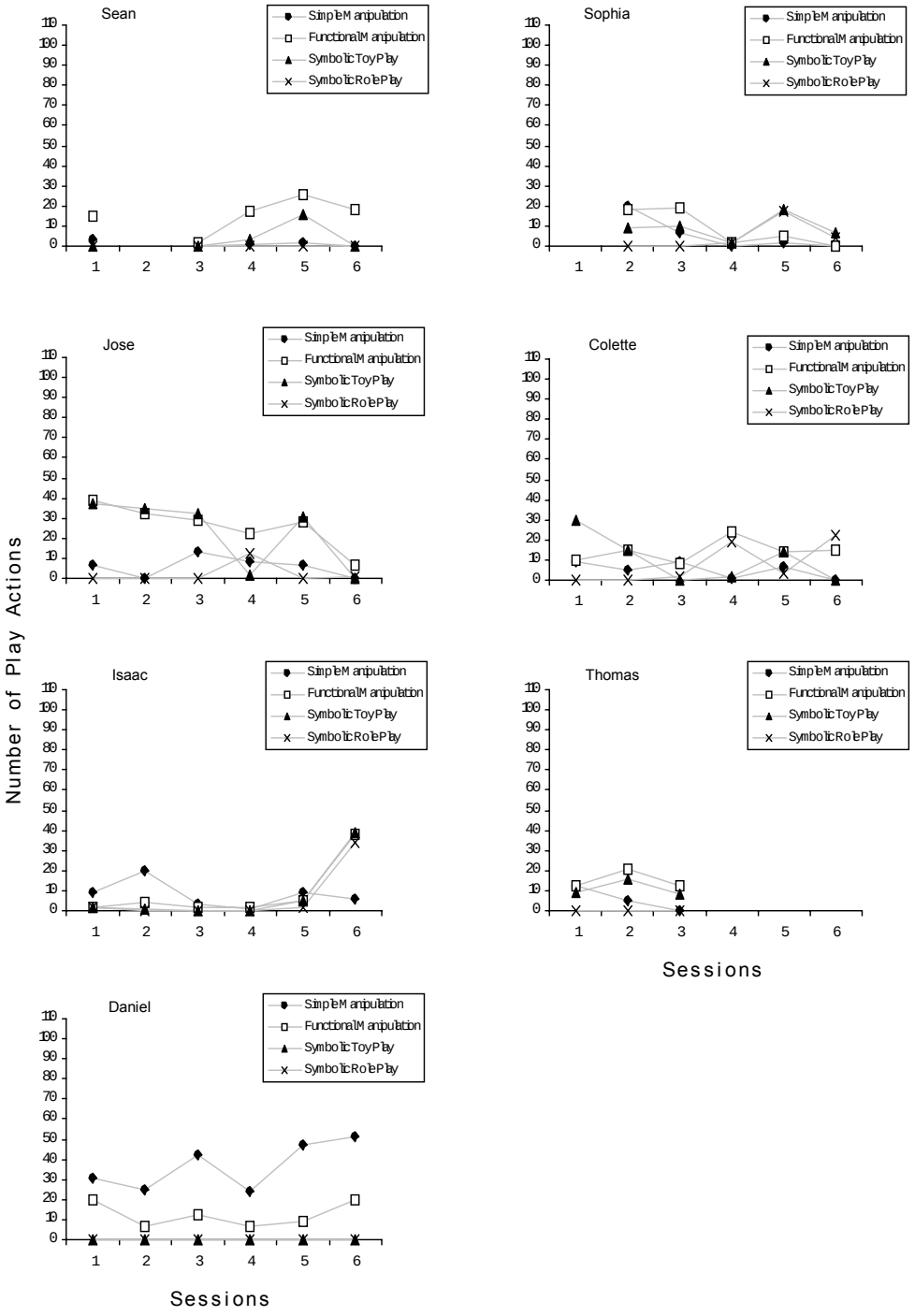


Figure 1. Play profile of all play types for all children.

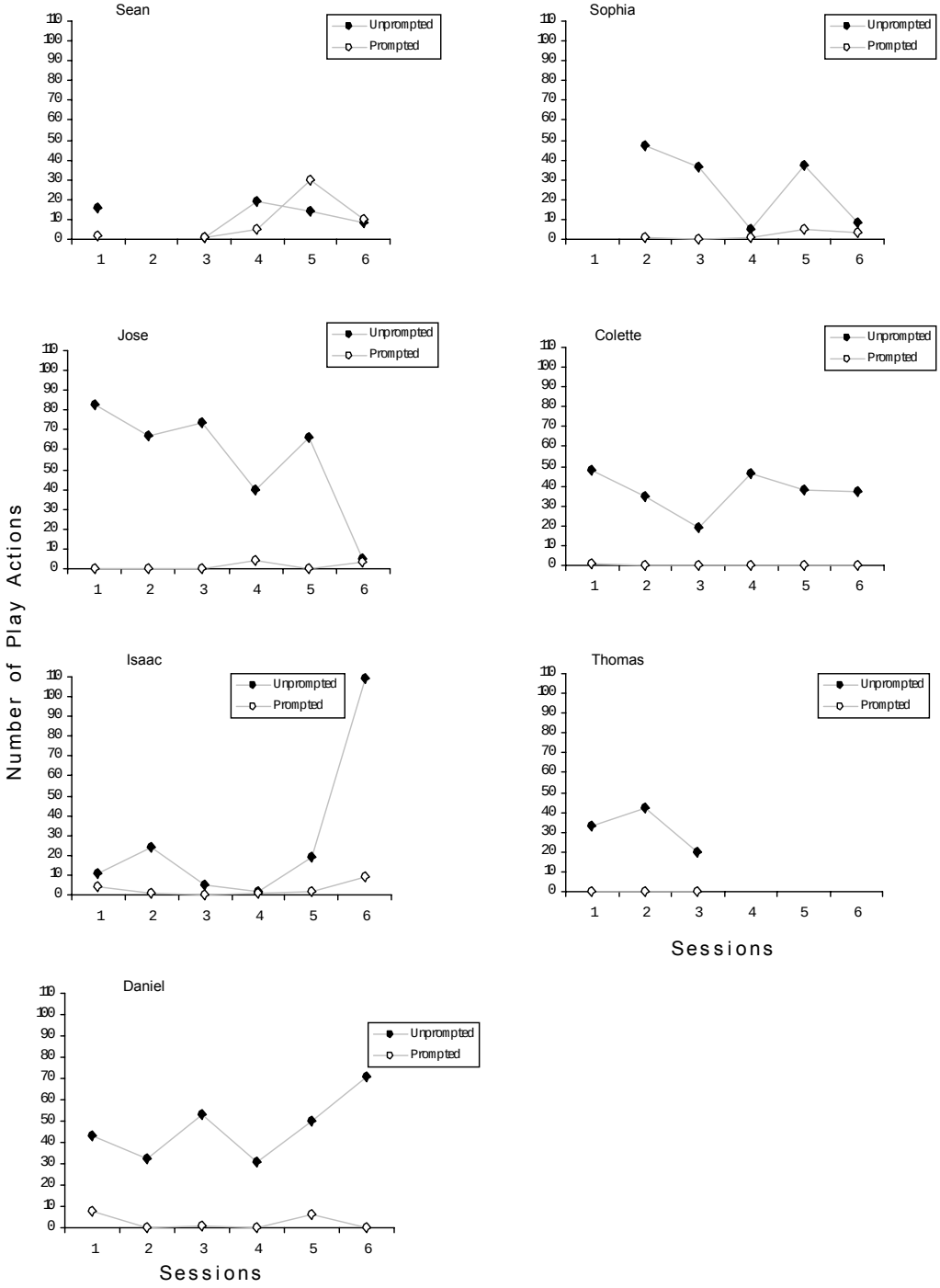


Figure 2. Play profile of all total unprompted and prompted play for all children.

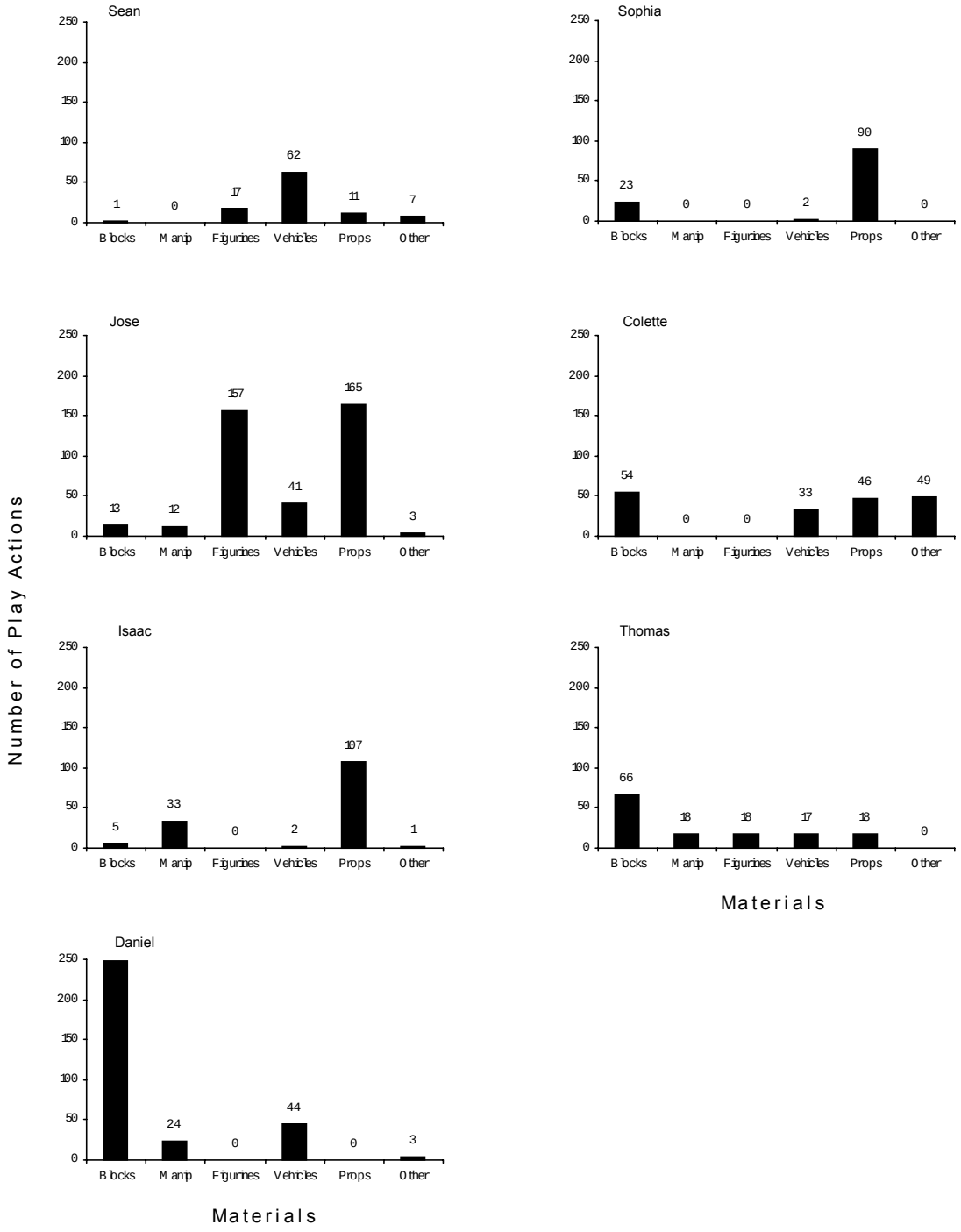


Figure 3. Play profile of all children's material use.

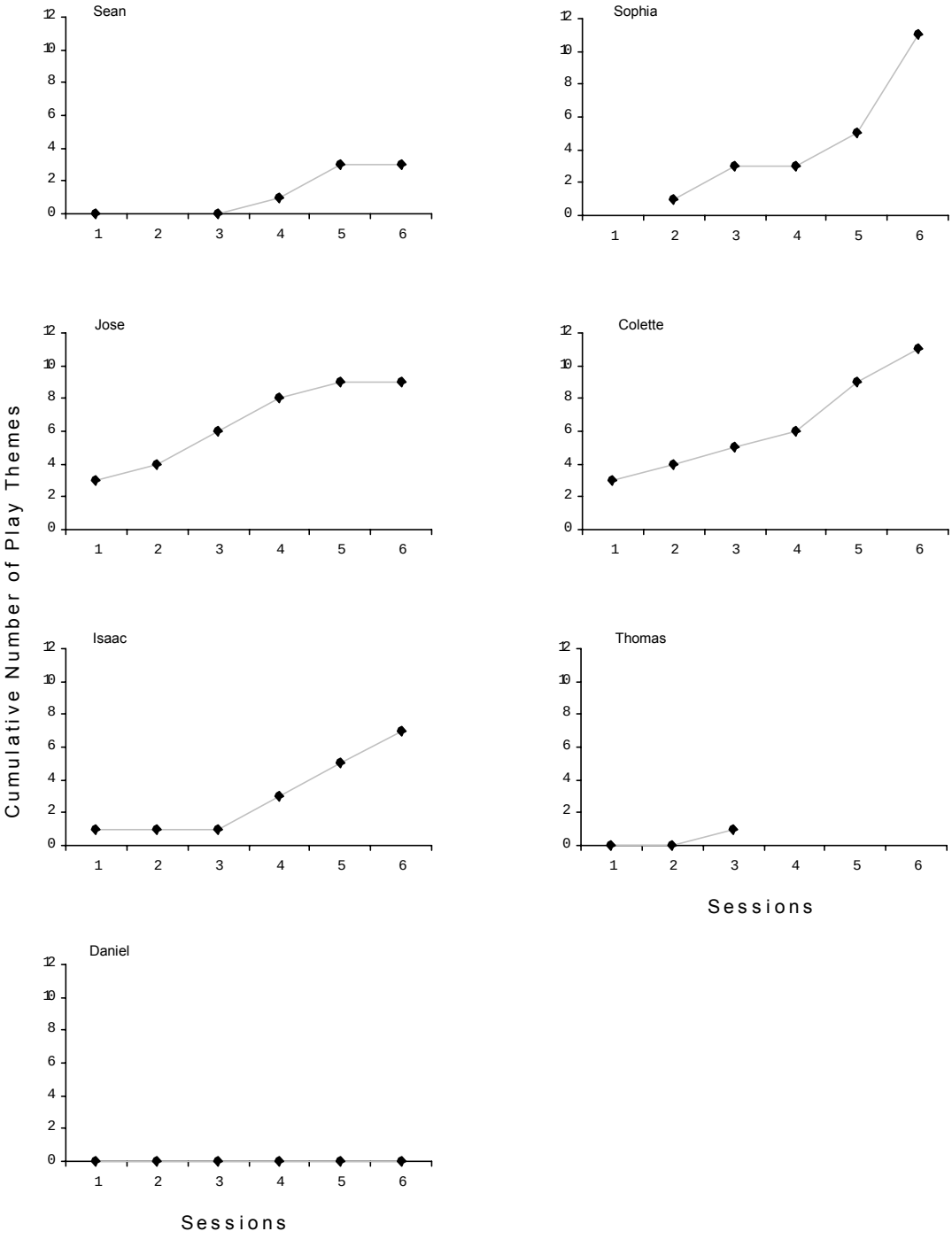


Figure 4. Play profile of all children's play themes.

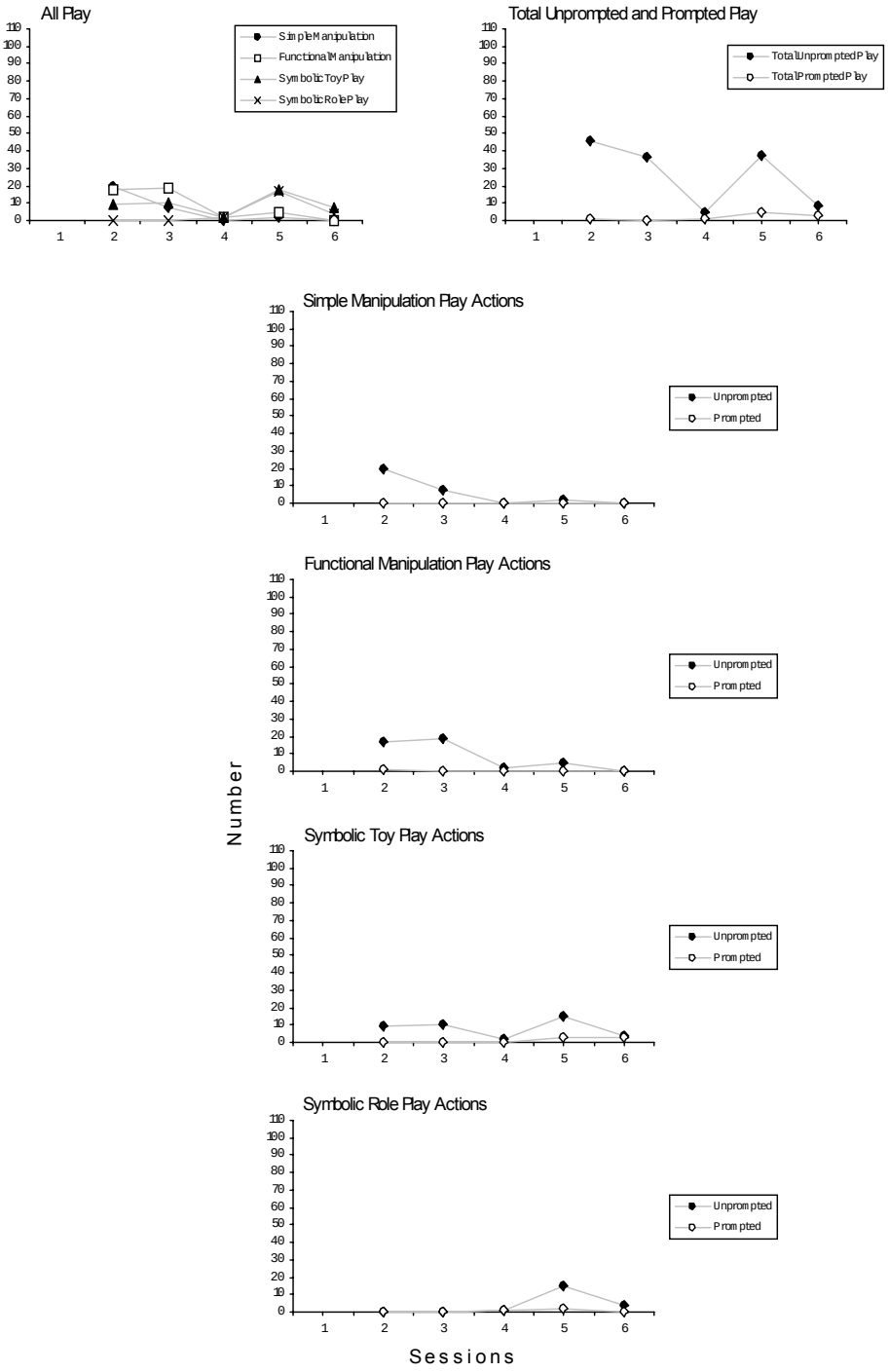


Figure 5. Play profile of Sophia's play types.

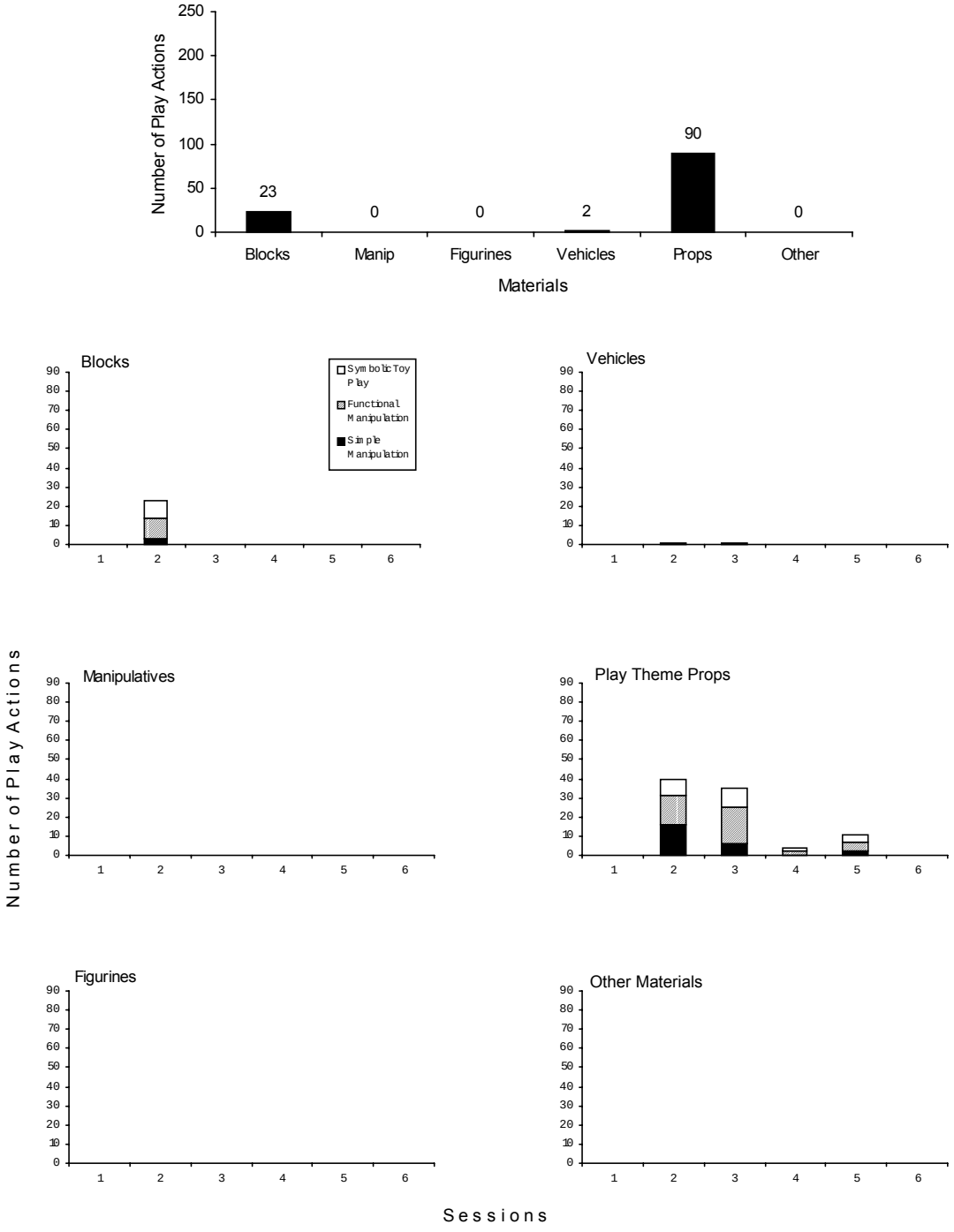
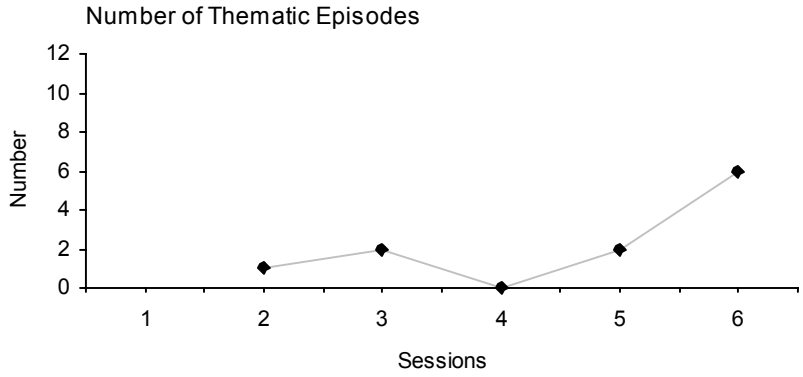


Figure 6. Play profile of Sophia's material use.



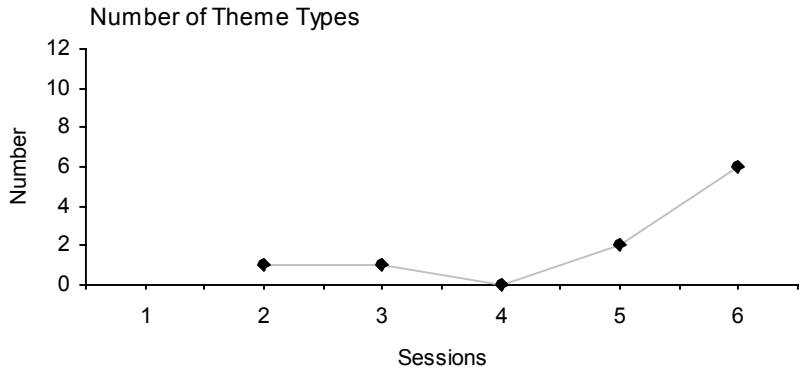


Figure 7. Pay profile of Sophia's play themes.

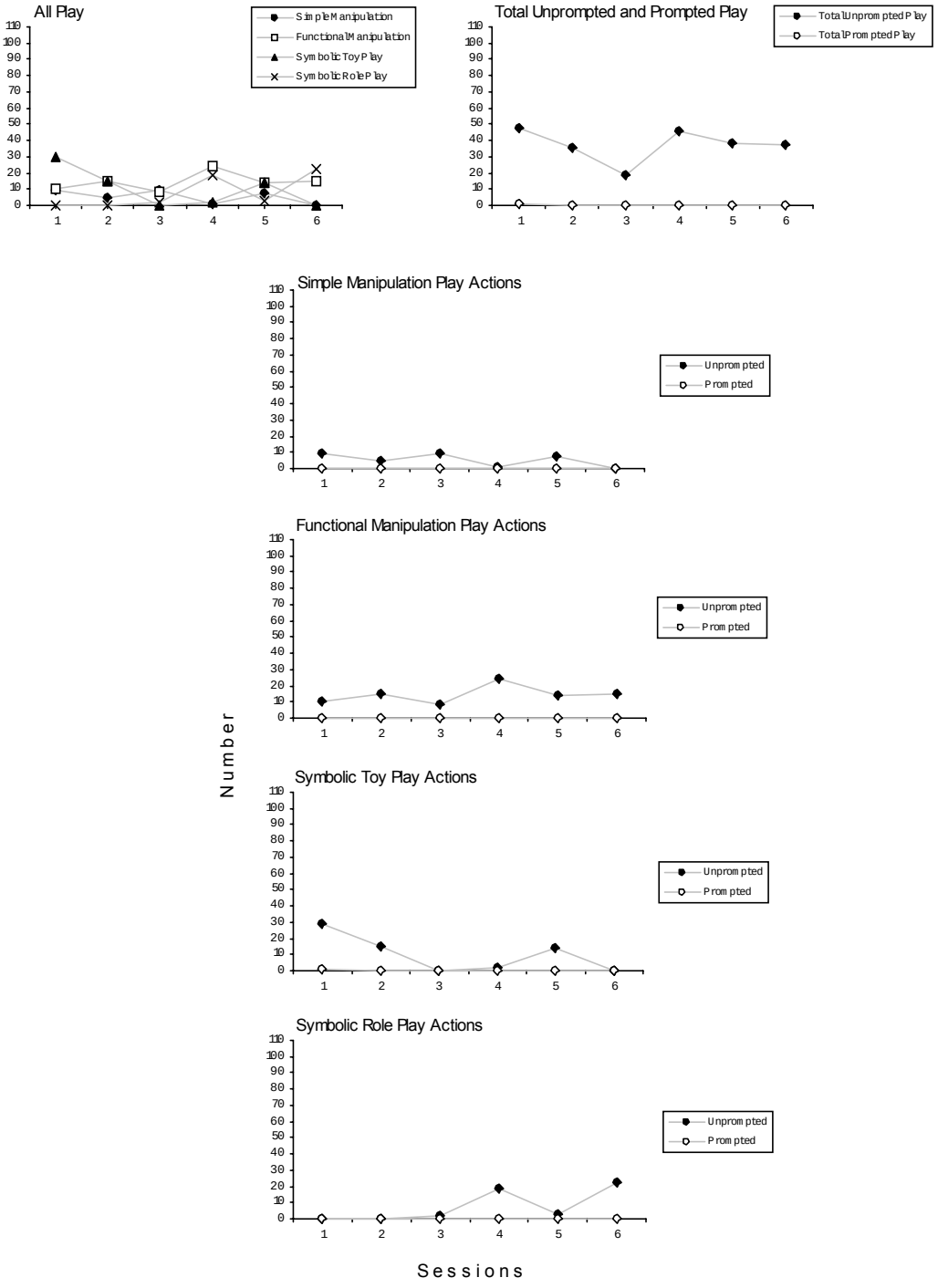


Figure 8. Play profile of Colette's play types.

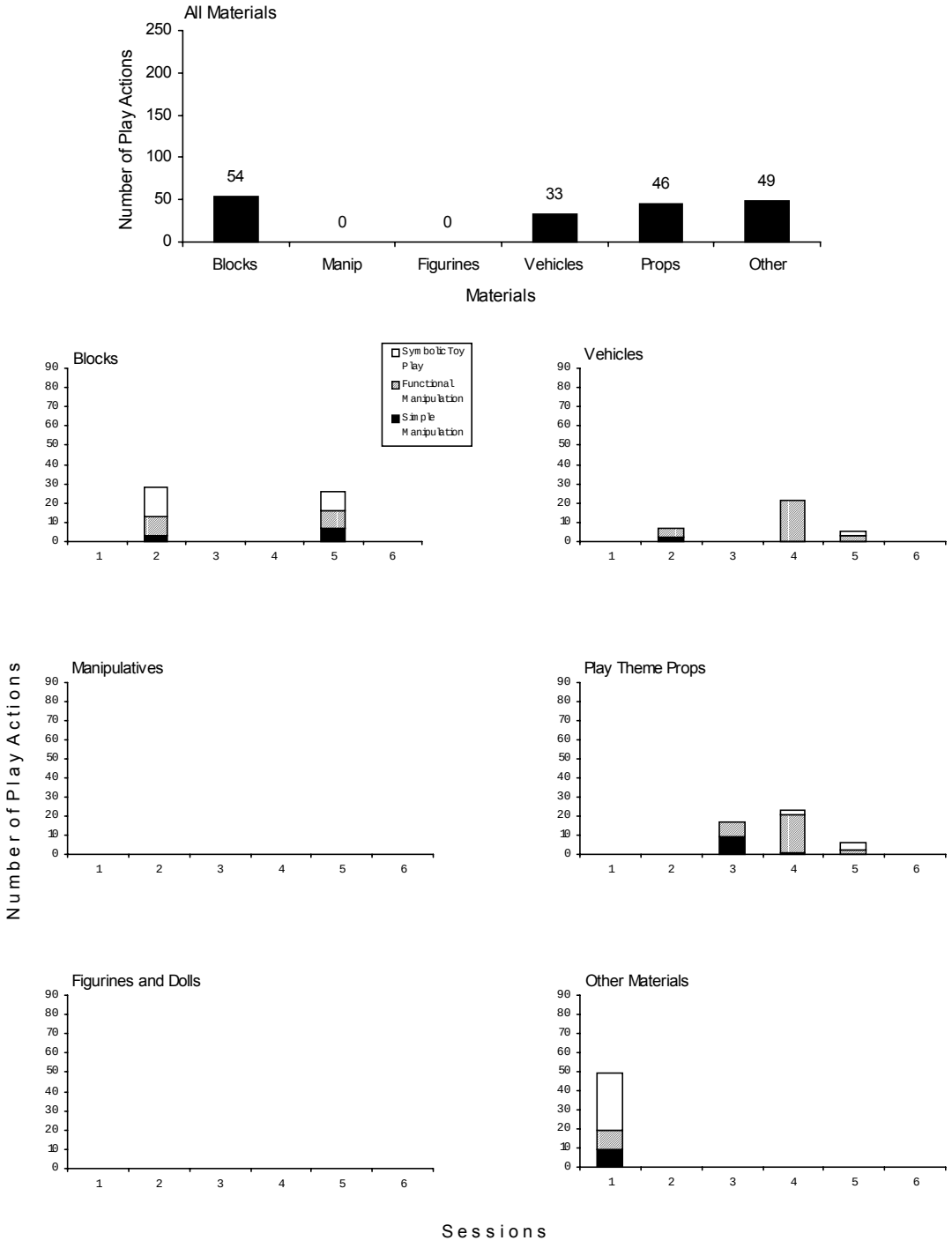
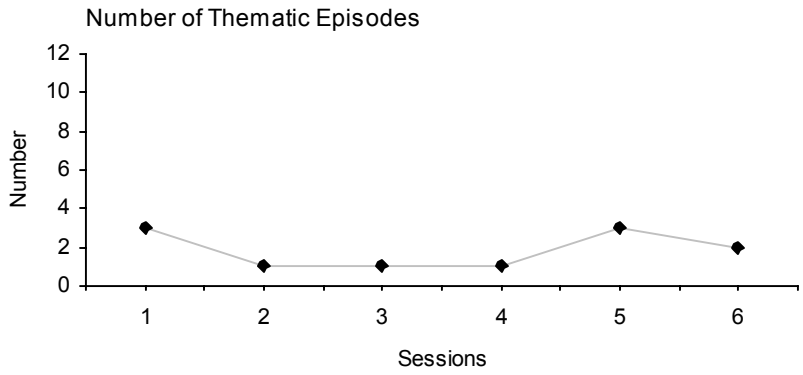


Figure 9. Play profile of Colette's material use.



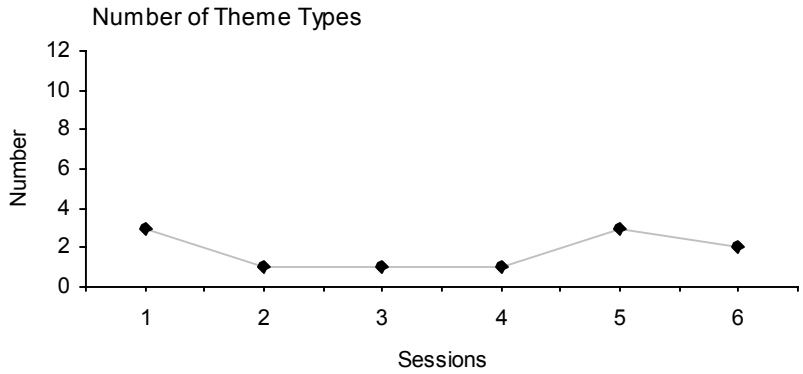


Figure 10. Play profile of Colette's play themes.

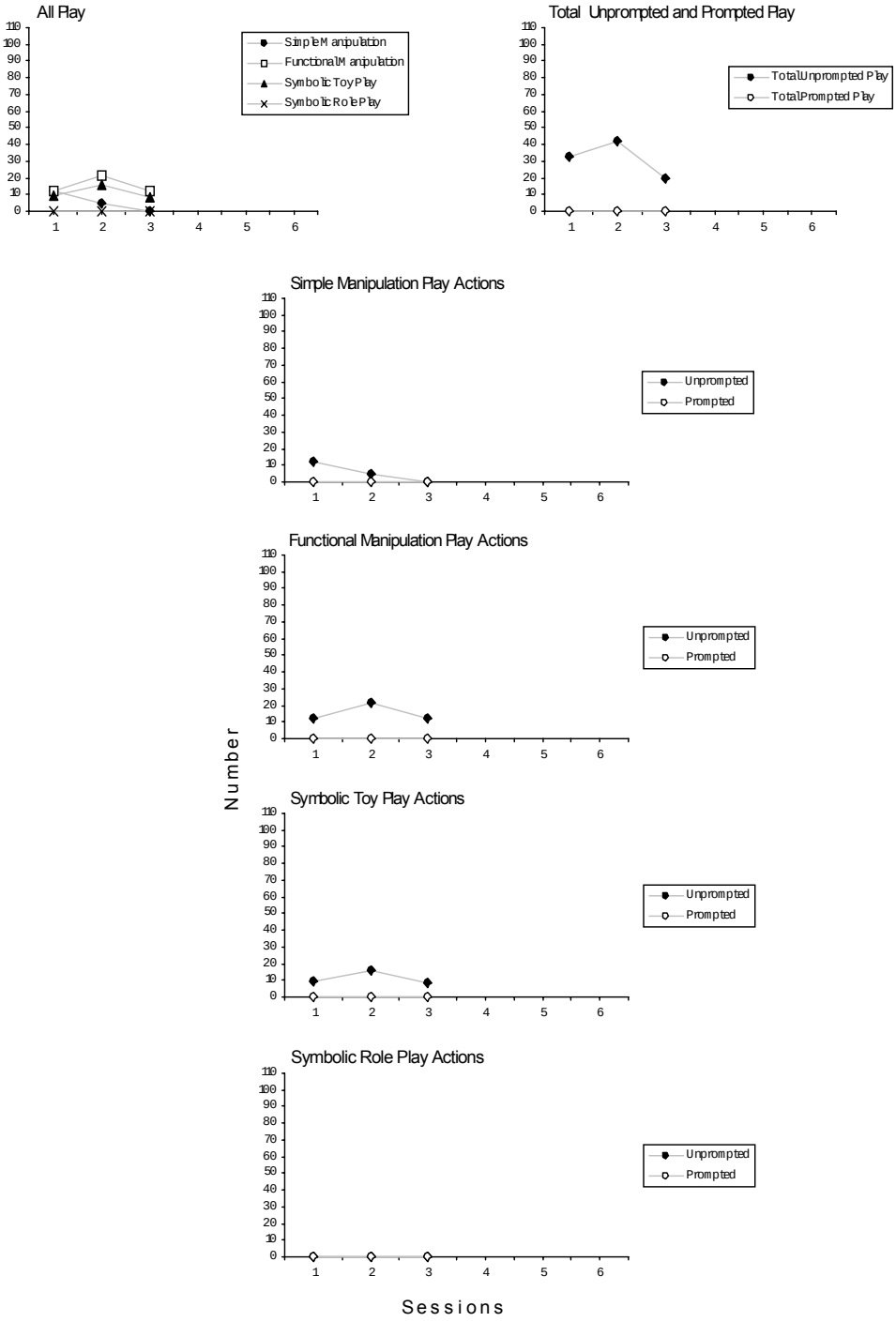


Figure 11. Play profile of Thomas' play types.

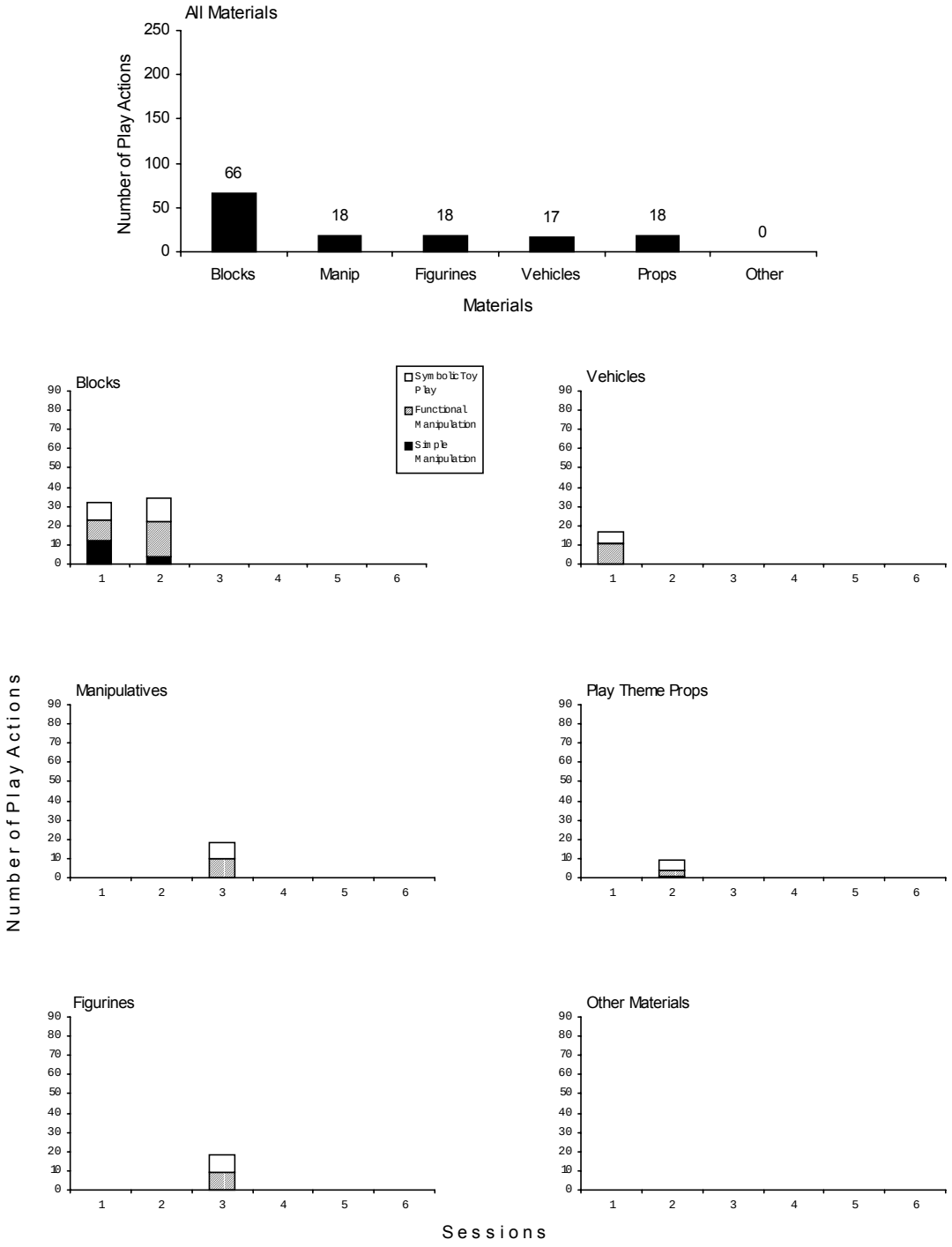
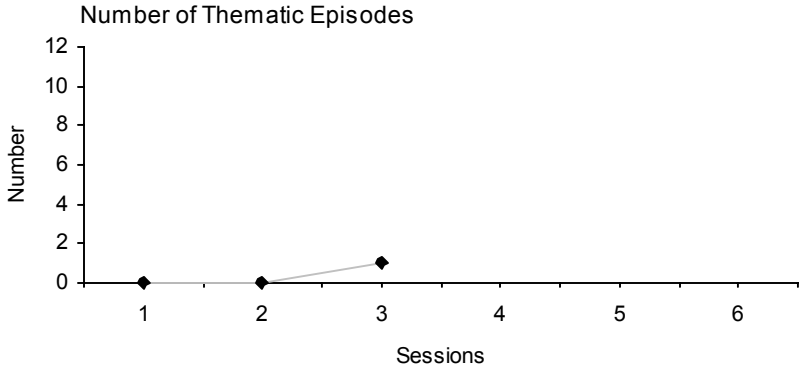


Figure 12. Play profile of Thomas' material use.



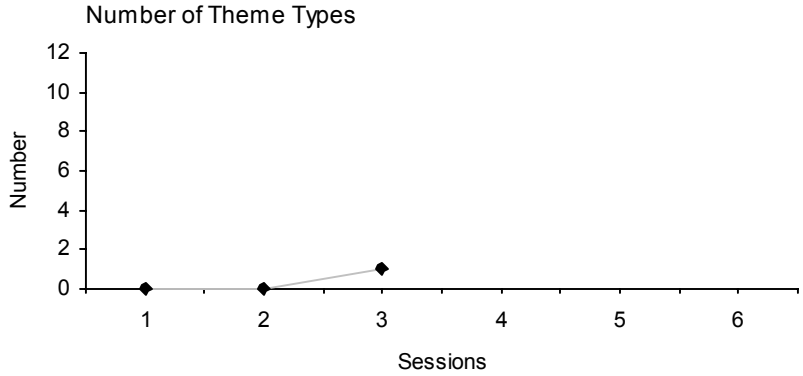


Figure 12. Play profile of Thomas' play themes.

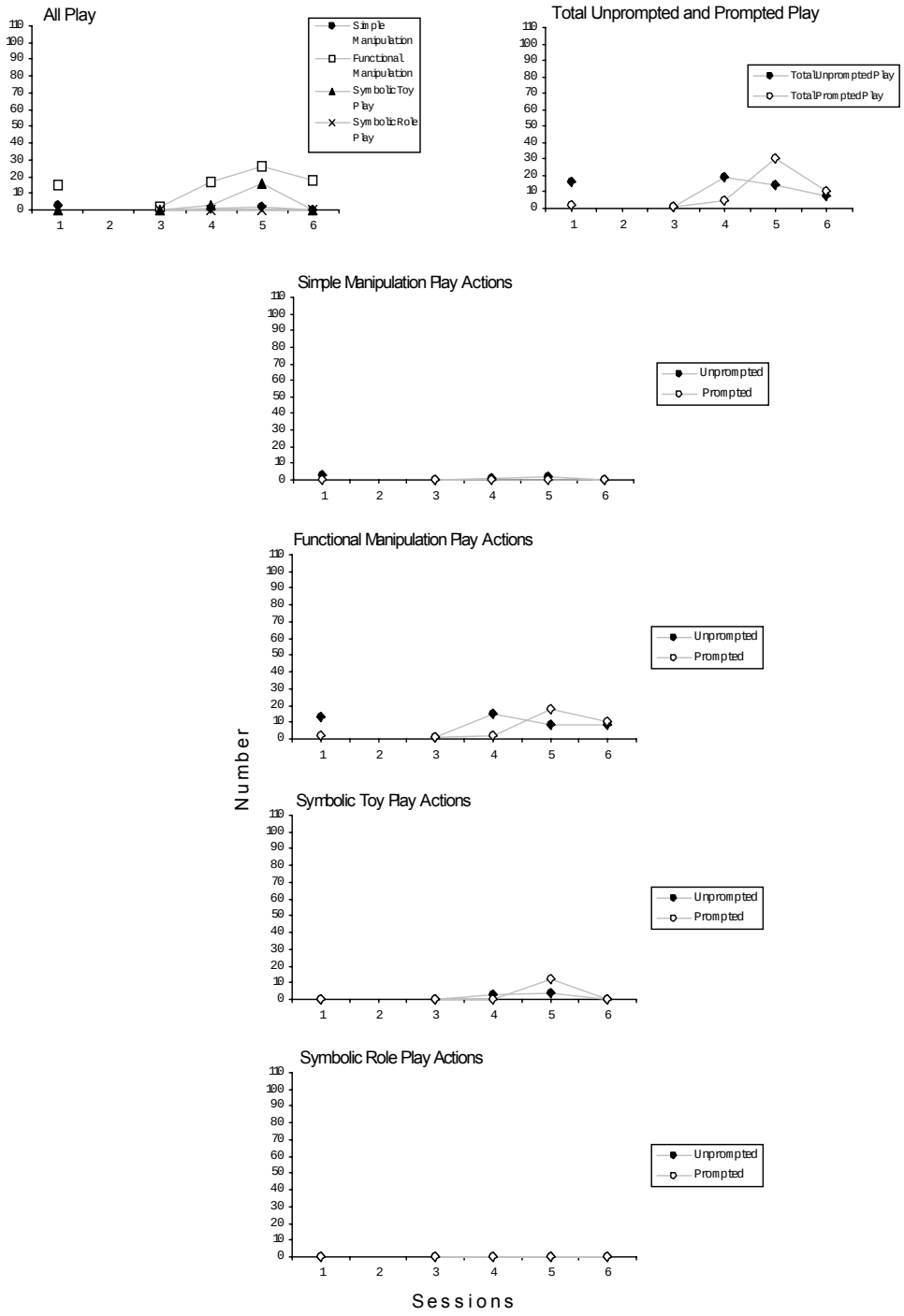


Figure 14. Play profile of Sean's play types.

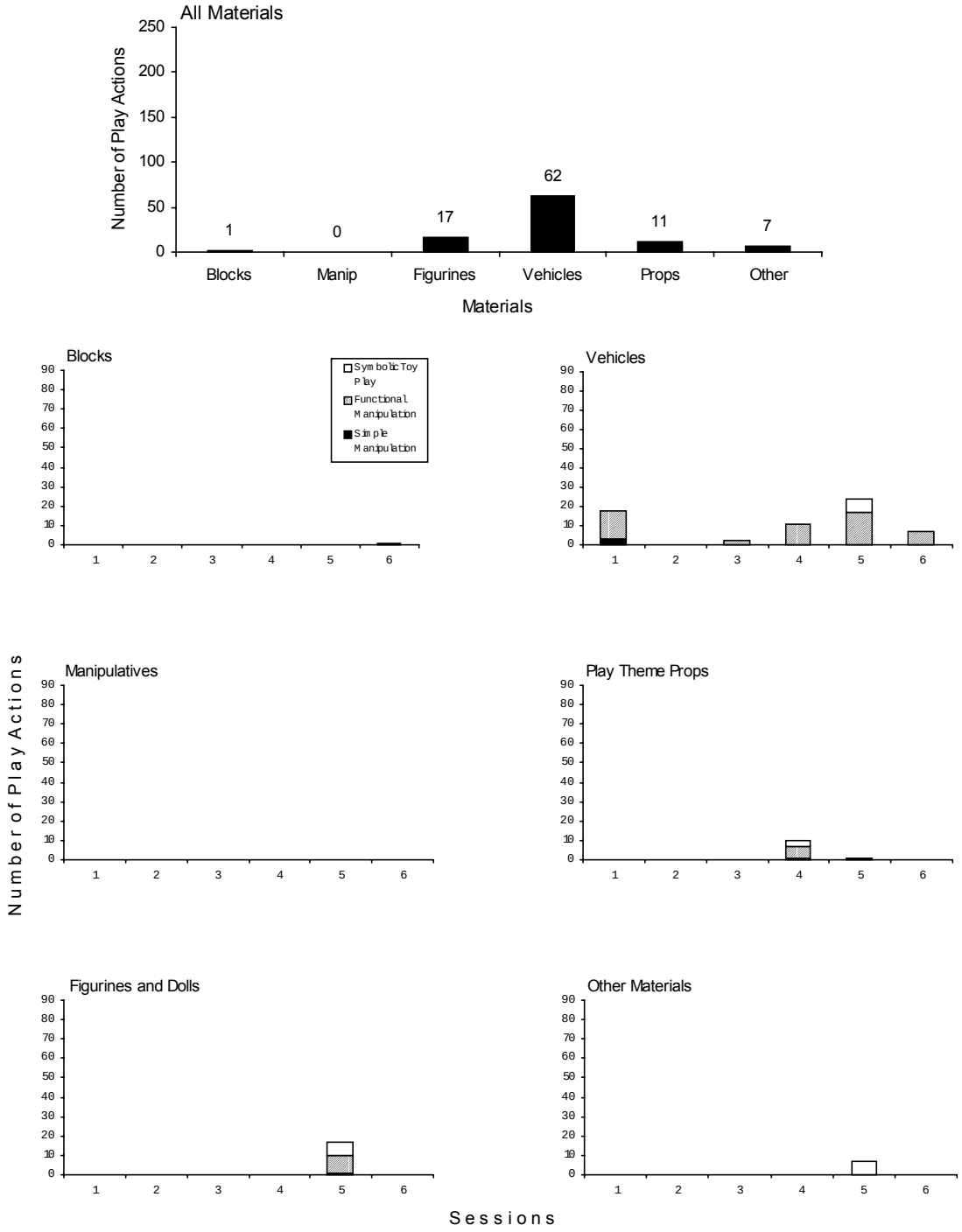


Figure 15. Play profile of Sean's material use.

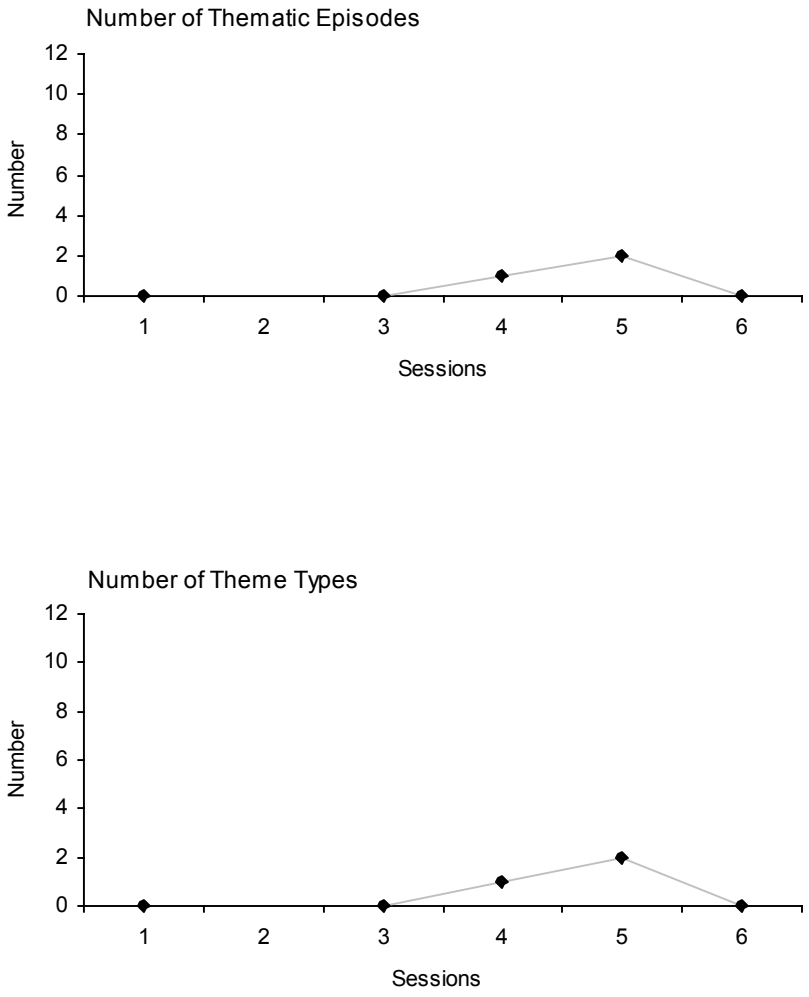


Figure 16. Play profile of Sean's play themes.

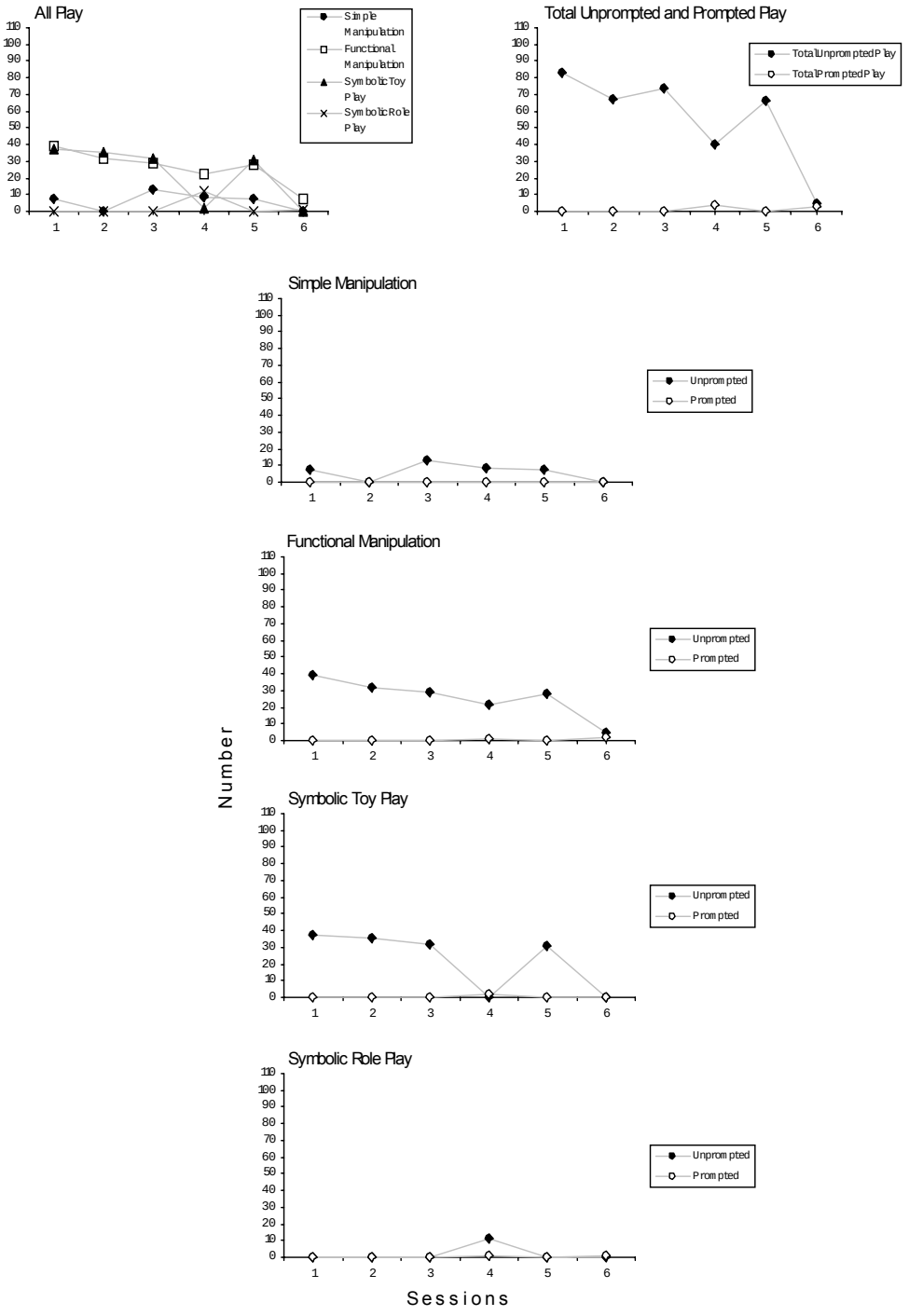


Figure 17. Play profile of Joses's play types.

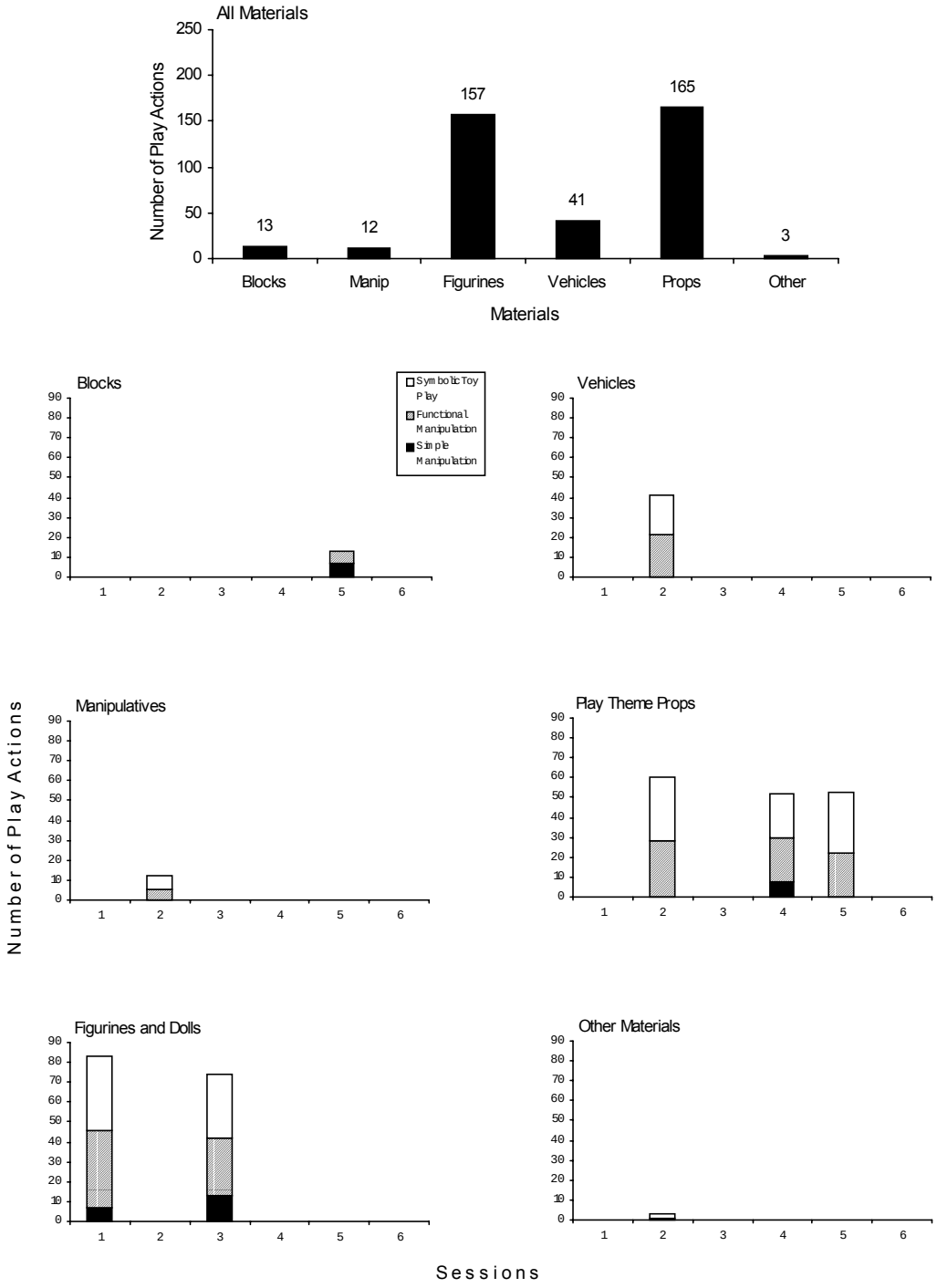
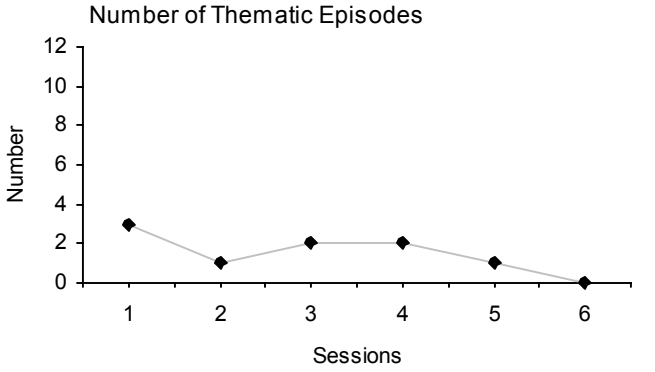


Figure 18. Play profile of Jose's material use.



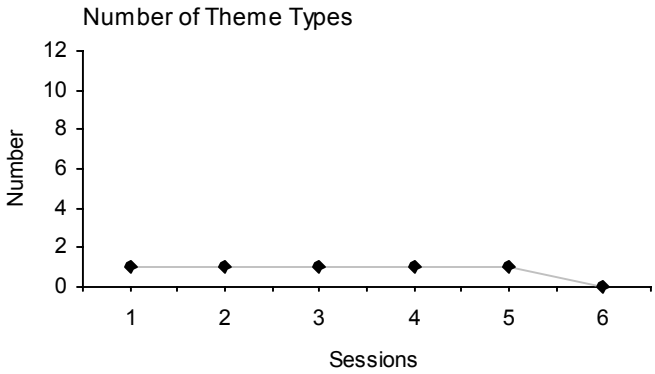


Figure 19. Play profile of Jose's play themes.

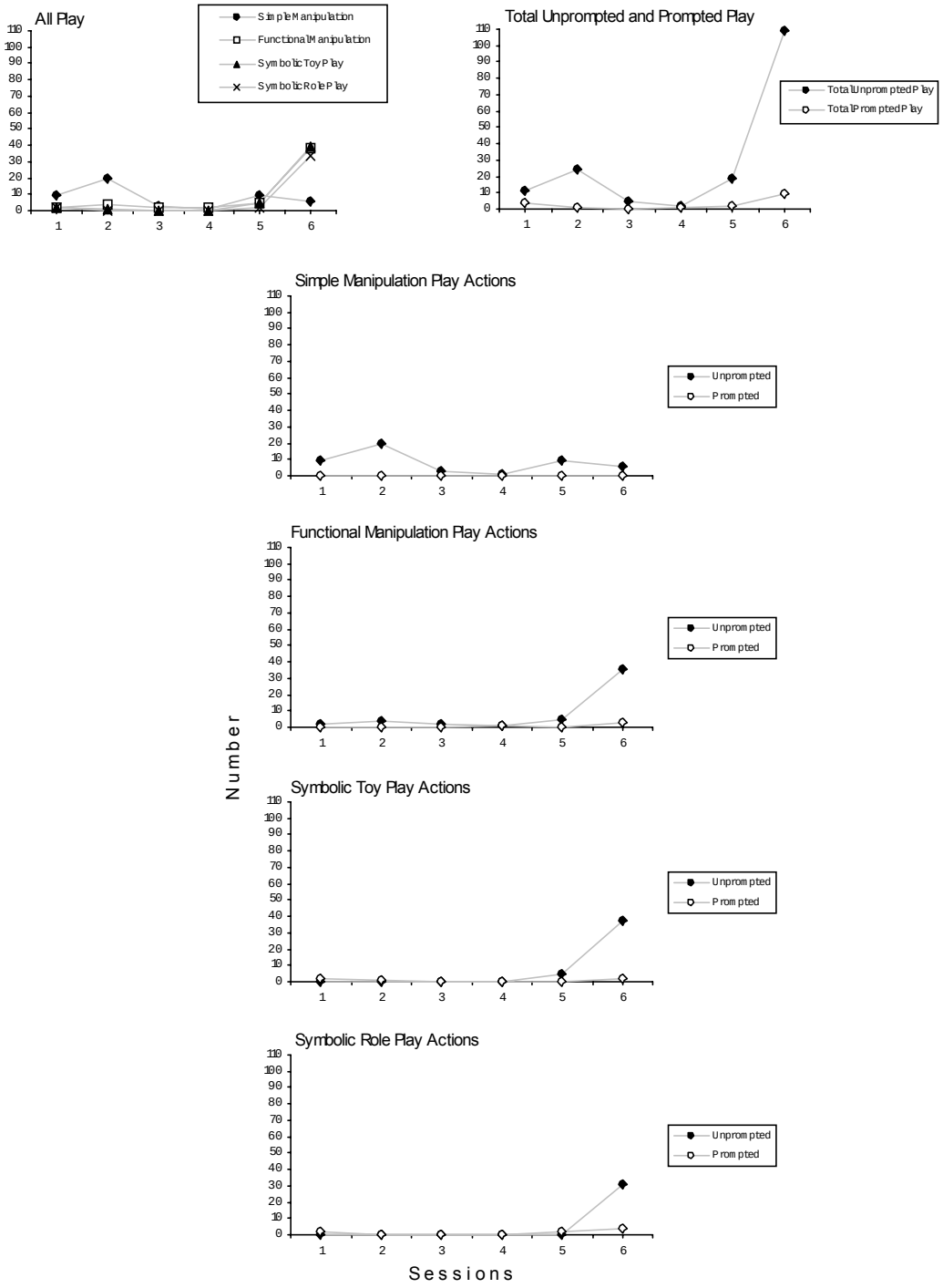


Figure 20. Play profile of Isaac's play types.

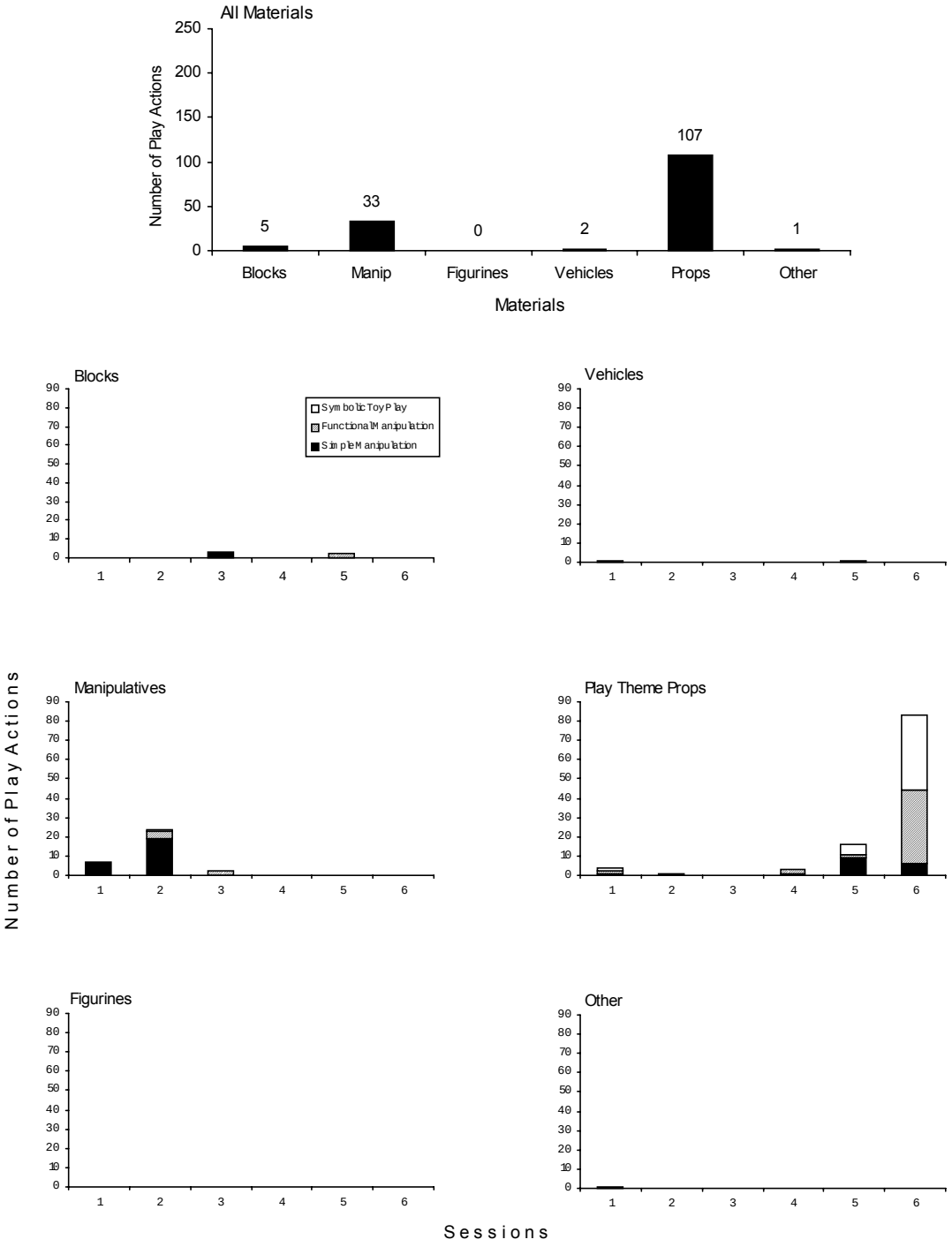
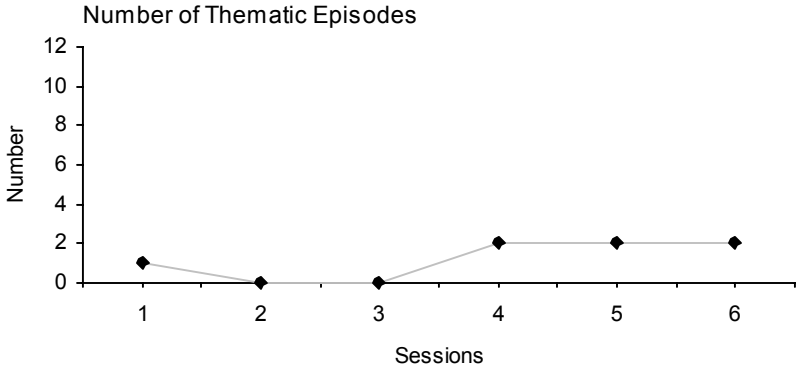


Figure 21. Play profile of Isaac's materials



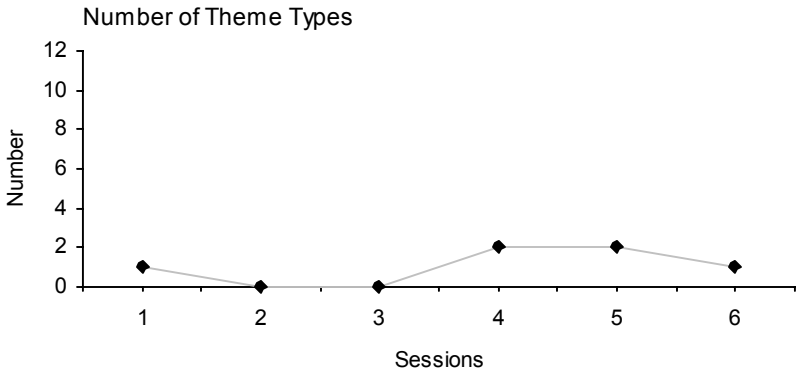


Figure 22. Play profile of Isaac's play themes.

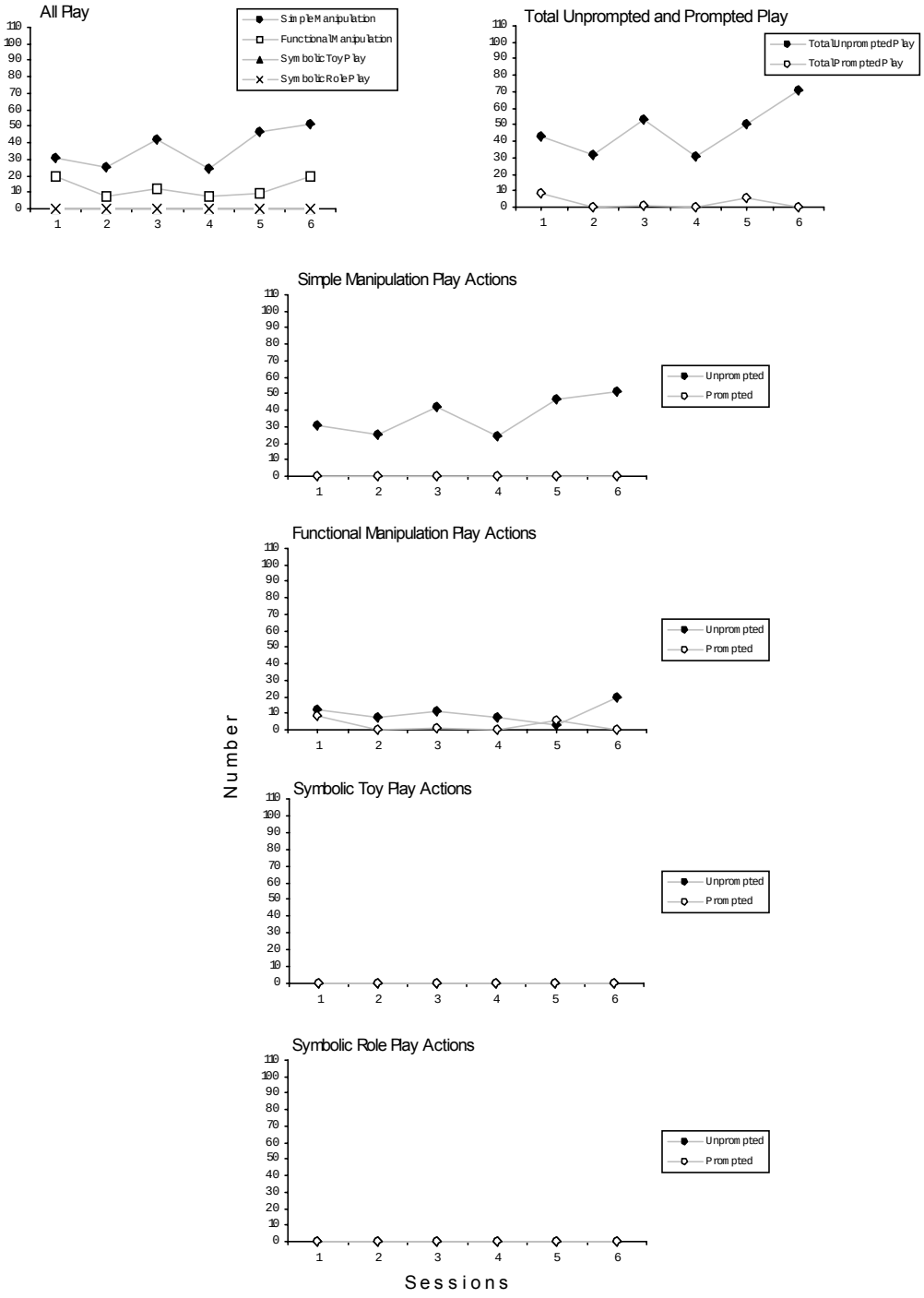


Figure 23. Play profile of Daniel's play types.

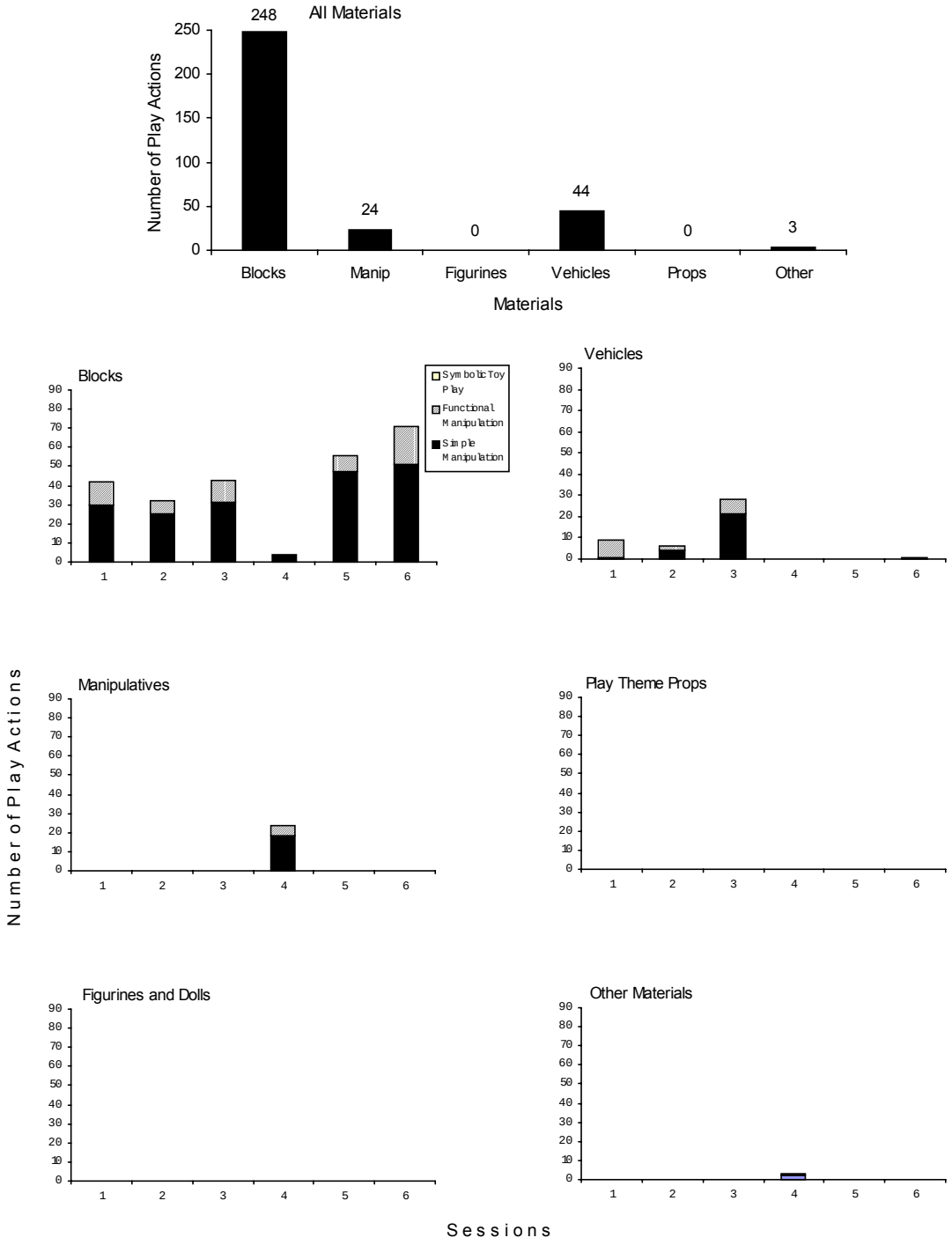
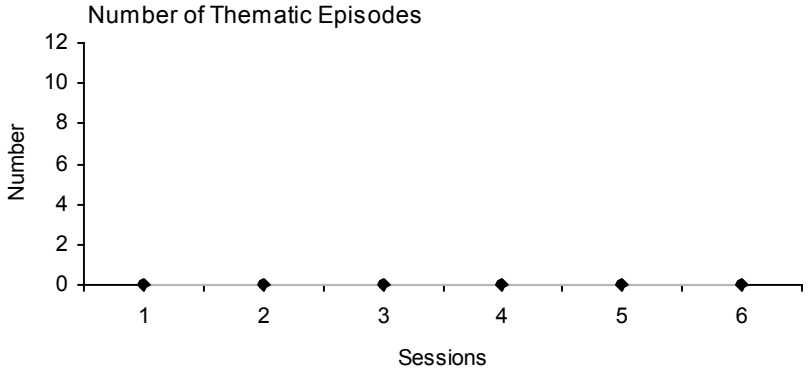


Figure 24. Play profile of Daniel's material use.



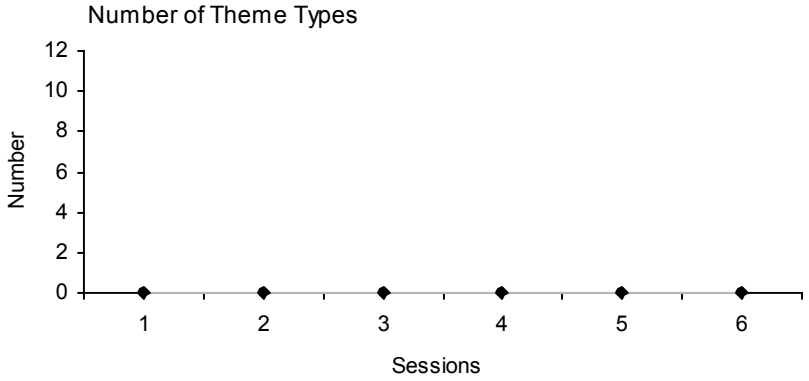


Figure 25. Play profile of Daniel's play themes.

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